ADVANCED

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In This Issue . . .

Published by **The Society for Advancement of Management**, the national professional organization of management people in Industry, Commerce, Government and Education, with national, regional and chapter activities.

WESTERN NORTH CAROLINA CHAPTER, S.A.M. TO REPEAT LEADERSHIP DEVELOPMENT WORKSHOP

The S.A.M. Western North Carolina Chapter will host for the second consecutive year the S.A.M.-N.T.L. Workshop In Leadership Development, in a six-day meeting on October 24-30. The famous Grove Park Manor, located at the foot of the beautiful Smoky Mountains, has been selected as the site for the Workshop.

Previously conducted by S.A.M. Chapters in Cincinnati, San Francisco, and Milwaukee, this Workshop has gained national recognition as one of the most effective methods to be devised in the area of management training. It uses the "laboratory" method of training which stresses the technique of giving participants a chance to learn more about themselves and to practice leadership skills in an environment which simulates on-the-job conditions. The Workshop consists of three main parts:

(1) A leadership Laboratory where groups of 15 under the guidance of a staff trainer study various behavior problems within the group for the purpose of increasing their understanding of group relations, improving skills of leadership, developing greater insight, and acquiring a better understanding of the behavior of others.

(2) Skill practice groups, where individuals have an opportunity to work on job cases and to analyze human relations problems through demonstrations.

(3) Information sessions, where the staff, through informational lectures, explain some of the things happening in the Laboratory group sessions and also bring up-to-date information on findings in the field of social science research.

Registration fee, including tuition and all Workshop materials, is $250; room and meals are extra. Registrations, which are limited to 60, will be accepted on a "first come, first served basis." To register, or to obtain more information, write to Mr. Francis M. Gilman, c/o American Enka Corporation, Enka, North Carolina.

ADVANCED MANAGEMENT

PROGRESS THROUGH ENLIGHTENED MANAGEMENT

"Through research, discussion, publications, and other appropriate means, to conduct and promote scientific study of the principles governing organized effort in industrial and economic life . . . for the general betterment of society . . ."

S.A.M. Constitution

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CONTENTS

ADVANCED MANAGEMENT, published monthly by the Society for the Advancement of Management, Inc., 74 Fifth Avenue, New York 11, N. Y., is successor to The Society for the Advancement of Management Journal, the Bulletin of the Taylor Society and of The Society of Industrial Engineers. Reentered as second-class matter, December 23, 1949, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Copyright, 1959, Society for Advancement of Management. Permission must be obtained for reprinting, digesting, or quotation. U. S. and Canada Subscription rates: $8.00 per year. Foreign Subscriptions: $9. Single copies: 75 cents (members); $1.00 (non-members). All members receive this publication, for which $4.00 of their dues is allocated. Reprints of articles readily available in quantity, price schedule on request. An index to ADVANCED MANAGEMENT is published annually, and the contents are also indexed in Industrial Arts Index, available at Public Libraries. Notification of address changes must be given four weeks in advance.

Management Development For The Space Age

HAVING THE HONOR and responsibility of serving as your President during this period of man's exploration into outer space makes one feel quite humble. It is certainly one of the most challenging periods in world history. While we at SAM are very much part of this outer space probe, we still have a great deal of unfinished business in the probing of man's inner space. I am referring, of course, to the fuller development of tomorrow's managers. Recently, Elmo Roper Associates asked some business executives and some economists for their reactions to the provocative issues raised by Harvard Professor Galbraith in his book, "The Affluent Society." Of all the issues raised, the one in which both the business executives and the economists had most agreement was:

"America's basic deficiency in facing the future is the inadequate cultivation and education of its human resources. We must therefore place less emphasis on material production and more on developing the applied intelligence and creativeness of our people."

I believe we would all agree that tomorrow's successful manager will be required to have a vastly more varied background. It goes without saying that he will need increased skill in scientific management. He will also have to know and understand a far more complex scientific world. And he will have to understand and deal increasingly with businessmen of other specialties and of other cultures. He will have to grasp geographical and economic relationships in a way he has never dreamed of before. He may be called upon to master languages for their more subtle meanings in dealings with businessmen from other countries.

How many of us could meet these requirements today? I'm afraid not too many. For that reason I believe we need to move immediately into two major areas:

1. Management manpower inventory.
   An appraisal and assessment of today's managers, followed by counseling to recommend major individual development needs.
2. Major Development and Training Program
   Provide an extended and extensive training program to help managers fill gaps in their experience and education.

Some of the more advanced corporations have already gone into the full range of management appraisals. We hope more will do so in the immediate future. It is the plan of SAM to establish several pilot programs in the coming year to meet the second need. Under the supervision of Dr. Frank Bradshaw several fifteen-week Advanced Management Seminars will be undertaken in various parts of the United States. Members of SAM will have the opportunity of sharing in this project.

In short, tomorrow's fully-rounded management personality will need brains and education to achieve success. He will need to know this shrinking world more thoroughly and in more detail than he has ever known it before. The responsibility of enlightened leadership, therefore, will be greater than ever. More selective and rapid decision making and increased accountability will continue to be the manager's prime responsibility to American economic life.

We of SAM will have a real opportunity to meet this responsibility by participating in the Advanced Management Seminars during the coming year.

Dause L. Bibby
President, S.A.M.

Opportunities For New Contributions To The Future Of Management By SAM Members*

by Harold F. Smiddy
Vice President—Management Consultation Services
General Electric Company

I AM HIGHLY honored and very frankly pleased by the citation "Professional Manager" that you have bestowed upon me tonight. As many of you know, I have enjoyed a very close association for many years with the Society for the Advancement of Management. I have seen it grow in stature from very modest beginnings. I know of its achievements, and I am well aware of the very high esteem in which SAM is held by America's business leaders. All this adds to the pride I feel.

My pleasure tonight, however, will not be in reminiscing about SAM, but rather in trying to look forward with you into the future as a basis for each of you here tonight to use in building your own individual image of that future, and in identifying, on your own, some of the boundless opportunities for continuing management contributions in that future. And, in so doing, you should view these opportunities not only as individuals, but as members of SAM, whose destiny each of you has a very real responsibility for guiding.

And what of that future? Where is your future going to be — especially you younger men to whom it really belongs? Are you going to be doing the same kind of work you do today? Or simply more of the same? Or will all need for that particular kind of work disappear? And if you're going to be doing a different kind of work, what will it be? Where? And what will SAM's role be five to ten years from now? Do you know? Perhaps I should pause a minute and let you reflect.

This growing, restless America we're in is changing rapidly, with new developments flashing across the scene with disturbing frequency. And change, you know, has a subtle quality. It comes upon you quietly, it creeps, and you pleasantly continue to operate on the basis of old and comfortable assumptions and premises, till suddenly change explodes opportunity in front of you—and you are totally unequipped to deal with it because your ways of thinking, your concepts, your techniques are all geared to an age that is with you no more.

Have you as yet tried to search out for yourself the basic trends emerging in our economy? Do you understand—or have you even attempted to understand—the changes taking place here and now . . . and their future implications both for you and for SAM? Do these changes perhaps require a fundamental reorientation in thinking on your part? . . . new habits? . . . new attitudes? And have you made plans to meet the new future opportunities generated by such changes?

And if you really want to put yourself to a test, ask yourself if your thinking is even tuned properly to the *present day* environment. Are there *differences* between the environment that Frederick W. Taylor faced more than fifty years ago and *that* which envelops us? If so, do you really believe you have altered your own thinking and perspectives sufficiently to enable you to sense, identify and capitalize on the many new opportunities that a *different* environment must offer? Have you, in effect, actually lifted your sights beyond the world of Taylor?

Let's together look at the present environment, and try to envision some possibilities of the future. I'd like to first describe some trends and currents I sense from which you can pick and choose as you see *fit* — and add others you feel appropriate — as you "package up" and build your *own individual* image of the future. Then we can together look at the implications of these future possibilities for you *and* for SAM.

Part I — The Economy

For a starter, let's look at the changing ways of that much maligned—but so very important — American customer. He's become a vacation-minded, traveling man. Last December air traffic to Europe jumped 25% over the previous December. Over the course of last winter, an estimated *15,000* Americans enjoyed the skiing facilities of the Alps; *700,000* Americans toured the Caribbean. Mr. Customer has also become very recreation minded. Resort areas generally are jammed. All golfing records are expected to be shattered

* Remarks on the occasion of the author's receiving the first Professional Manager Citation from the New York Chapter, SAM, June 4, 1959.

this year. Twenty-two million bowlers will spend $1 billion this year on *that* "little" industry. Thus, Mr. Customer has become a voracious consumer of services.

Education is enjoying a boom and glamorous antibiotics and other discoveries have boosted the medical services share of the *Gross National Product* 17% in the last ten years . . . and that is quite a jump if you think about it.

The expected increase in leisure time, the already demonstrated great enthusiasm for recreation, travel and education, the demand for personal services—such as laundries, dry-cleaning, even contract maid or catering services at home and so on — on the part of growing numbers of working wives, and the expansion in the over 65 age group which uses medical services at a high rate all combine to suggest that services will take an even *bigger bite* out of personal consumption in the future.

All in all, the services percentage of the total Personal Consumption Expenditures has risen from *31.1%* in 1947 to *38.6%* in 1958 and this growth can be expected to continue at the expense percentage-wise of manufactured goods.

All the services industries (including the government and services to business) now account for *56%* of the Gross National Product and this percentage can be expected to rise. It's probably a surprise to some of you to realize how far we have come from a peasant, back-woods, agricultural, or even simple manufacturing economy to a so-called "Economy of Services."

And what significant changes are there in employment? In 1870, *23%* of the labor force worked in services; in 1920, *36%;* today, *52%*. There has been a wholesale shift *from* the factory *to* the services industries . . . the white collar is outstripping the blue collar.

This is far from the whole story. Even within manufacturing firms there has been a very dramatic shift of workers *from* the factory to other jobs outside the factory, such as clerks, salesmen, and researchers. And within the factory itself, the factory-hand, as such, is no longer dominant on the scene. For example, the new Ford plants at Cleveland and Dearborn use 1800 fewer direct laborers, but 1000 more skilled mantenance men than conventional plants turning out the same volume.

Automation has been largely responsible for these shifts. But it has brought perhaps an even more significant change, very subtle and difficult to sense. The factory is no longer a world of human physical work. Mental work has come to the fore. Words, symbols, processes are the currency of the factory rather than human physical motion. It's a *new world*.

With respect to productivity, tremendous gains have been scored in the manufacturing sector. But the services industries' record of recent date isn't encouraging. Although the services industries percentage of the total labor force has increased rapidly in the past few years, the percentage of the Gross National Product contributed by the total services industries has not increased substantially. Thus, it appears that the productivity of the services area is lagging that of the manufacturing area. Moreover, the National Bureau of Economic Research has released recently figures for the years 1947 through 1957 which show that the annual increase in output per worker in the services industries has not matched that of the manufacturing worker.

And there's real need for a pick-up in productivity in services, especially if the country's workers are shifting to this *low* productivity area from the high productivity manufacturing area.

Moreover, since labor is a very high percentage of the total costs in services industries, recently stepped-up labor activity in this area could force up wages, which are generally very low, to a point where the price of services will become *unattractive*. Services industries have already suffered from such manufactured products as home permanent wave kits, wash and wear fabrics, and disposable paper napkins and tablecloths.

And all these developments are taking place in a setting of an economy booming to new heights — with some forecasts heralding an increase of 50% in the Gross National Product in a short ten years.

Part II — Opportunities in Industry

As you fill in and "package up" *your own individual* image of the future, do you not see these trends too? . . . an economy growing at a fantastic pace . . . the rise of the services industries . . . the shift of workers from the production line to maintenance work, and outside the factory altogether. Do you too not see a different world in the factory? Even if in *your* picture you see other trends as being more important, don't you see a change? — A different environment everywhere in the economy? And doesn't this change open up *brand new* unplowed areas for application of the orderly systematic approach — areas which didn't exist before and certainly not in Taylor's time? In sum, don't you too see exciting new opportunities?

Will these opportunities call for the same kind of work you're doing today? Certainly, in the factory, there will still be need for the orderly, systematic approach of the individual engineer and cost analyst. But if you're pleasantly assuming they'll be doing more of the same kind of work, look again at your own image of the future — where are the direct laborers to time study? Where are the direct labor hours to which to relate overhead? The cost analyst of the future may be facing the question of dealing with labor as basically a *fixed* cost. He will have to develop more meaningful measures than cost per unit — such as the petroleum industry's cost per unit of time of production at a given capacity rate.

The industrial engineer may well have to come to grips with the tremendous increase in maintenance crews required to install and service the automated equipment and to find ways of distinguishing between truly contributing and non-contributing elements of this overhead. In the new factory environment he will be dealing with words, symbols and processes instead of physical motion as he seeks ways to multiply *mental* output, instead of only physical output as in the past.

But these new kinds of work in the factory cannot be done with the same tools, methods and practices we have today. We will need *new* thinking, *new* approaches, *new* attitudes. As a matter of fact, we may need to deal more in terms of broad principles and concepts in the future, rather than with practices and methods.

And we cannot wait 'til we absolutely need these new approaches before fashioning them. But who will pioneer

them *now,* if not you gentlemen here tonight, and organizations like SAM? And to really do this will it not require that *today* you raise your sights and focus — and that of SAM — beyond your current experience, beyond the work of simply time-study and analysis of physical motion? Must you not aim at something *entirely different?*

And does your own individual image of the future show areas other than the factory as ripe for orderly, systematic study? Have we not become overly fascinated with factory, which is the very sector in which the great achievements have *already been made,* and which progressively offers less and less with which to work? Do the walls of the factory really describe the horizons of "scientific managing" or does not its vision extend beyond into non-manufacturing functions?

The marketing man will have to learn to plan "smarter" and further into the future. He may have to learn how to sell "capacity" like the utilities or to lease equipment. And the engineer will have to learn how to accelerate the process of translating design into operating equipment.

Are not these great opportunities for application of the orderly, scientific approach? But will it be applied unless you today *deliberately* and *purposefully* broaden your vision, and focus your attention — and that of SAM — on these new areas? Who will do it if you do not?

Part III — Opportunities Outside Industry

Does the industrial sector define the limits of "scientific managing"? Have we not really ignored the services area, which has grown tremendously and which has real need for productivity? Do not the truly wide open opportunities for systematic study and big gains in productivity lie in this area?

But again, will we capitalize on these opportunities unless we consciously and thoughtfully develop now a more forward looking attitude — in fact revamp our own whole orientation towards "scientific managing" — and in the process, transform SAM, and re-shape its focus, so that it is identified more deeply with all sectors of the economy and not just the factory.

Let's look at this services area. Some systematic study has been given to it, and we've all noted the advances from self-service, vending machines, and the use of computers in offices. For example, Pan Atlantic Steamship Company carries cargo in truck trailers enabling unloading and loading of a ship in fifteen hours with two crews versus seven days and seven crews for a conventional ship. Yet, in the overall, very little has been done.

Why hasn't this sector in general been subjected to the same searching systematic study devoted to the factory? Surely one reason is the almost unrecognized growth of the services industries, as already described. But perhaps even more important is the sheer complexity of this sector . . . large numbers of people . . . great numbers of units, some independent, some part of a larger organization, and all geographically dispersed.

Other unique characteristics are the closeness to the customer of virtually *all* productive personnel, and the consequent requirement to deal flexibly with such imponderables and immeasurables as customer desires and needs, tastes, shifting wants, markets, competition, advertising programs, discounts and a whole host of other seeming intangibles.

Moreover, this sector was peppered with energetic, forceful individuals who proclaimed proudly that they worked by feel and intuition, and "couldn't tell you what they did each day." All this seemed to preclude systematic analysis and made the area seem unattractive compared to the factory where a product could be seen and results precisely measured.

But let us look at this a bit more closely. "Product" was *not* really the basis around which the systematic, orderly approach in the factory was built, but rather it was built around the *work process* itself. And just as we defined precisely and rigorously the work of the production worker and analyzed its elements, so also we can "get behind" as it were, work in the services area — selling, for example, — to identify, rigorously define, and analyze its elements. Here is real opportunity.

The orderly systematic reasoning process as developed in the manufacturing plant *can* be applied here. We can shake out the mystery and intuition, and substitute knowledge — just as we eliminated the mysteries of the various crafts in the factory — and organize such knowledge into teachable, learnable disciplines as required, subsequently structuring it as work. It will require different tools and method, but it can be done.

What opportunities do you see in this area? I'd like to mention a few within four broad areas, just as illustrations to which I'm sure you can add many, many more.

The First Broad Area — Establishing Objectives and Planning

Of the thousands of firms in the services industries, there is not too much evidence that many have developed — or even attempted to develop — clear concepts of purpose. Many of these businesses have grown on a topsy basis . . . by feel and intuition . . . frequently starting as a one man operation to fulfill a specific function and slowly absorbing other functions at random without deliberate conscious consideration as to the "fit" of each new function to the business, or its ultimate impact on the over-all structure.

Yet, purpose is the key to productivity. Without such clear understanding of purpose firmly fixed in mind, resources cannot be precisely targeted and organized, and are therefore dissipated.

In view of the many complicating phenomena, already described, which surround these services businesses, how can we systematically analyze the data of the business, define its essential characteristics, and thereby identify and define patterns of simplicity amidst all this complexity as a basis for permitting the owner to clearly understand his business . . . and determine what it *should be?*

For example, should a business be:

Railroading, or really transportation?

Furniture retailing, or really home decoration?

Camera supply, or really the hobby business?

Printing, or really publishing?

With this established, how can the services industries be induced to plan . . . something quite foreign to these industries? Too many of them consider themselves at the mercy of environmental forces, with their only job to adapt to these forces as they emerge. But the manager of a service unit can plan. In particular, realizing that he is

an integral part of a joint flow from raw material to consumer, he can aid in sensing and establishing the common purposes of all the components in this flow — be they manufacturers, distributors or retailers.

Thus, he can plan for his own separate and distinct area in the flow to accomplish these overriding common purposes. Rather than working against other components in the flow, as in the past, with the resultant building of unnecessarily large inventories at certain points in the flow causing instability, he can plan to smoothly integrate his efforts with those of all other components in the process. In effect, then, the manager can become a governor, helping to minimize big swings in the flow, while contributing to over-all steady growth. But, who will help him to learn how to do this?

Once he is convinced of the value of planning, how can we bring order to the assumptions and risks underlying any plan, and to the many imponderables impacting on it in the services industries? How can we factor into the planning and budgeting recognition that building a healthy and sound service business takes years . . . that selling intangibles is a tough and long-term process?

The Second Broad Area—Organizing

Organizations that have developed on a haphazard basis by feel and intuition, that have a large content of creative, difficult-to-define or "intangible" work — such as the services industries — are often characterized by a loose, ill-defined and fluid organization of work. And what are often the inevitable results? Omissions, uncertain policies, duplication of work, vague measures of accountability, confusion, *low productivity* and *high costs*.

By fashioning the appropriate tools and methods to "get at" and rigorously define the work needed to attain the objectives, separating it clearly from the unnecessary and parasitical efforts that inevitably flourish when there is no exposure to systematic analysis, we can substantially contribute to productivity. And when the necessary work has been determined, how can useful and adequate criteria be developed to permit designing this work clearly and cleanly into individual positions, to make sure the work is known and done, and that duplication of responsibility, which literally "eats away" at productivity, is eliminated?

Knowledge and skill requirements are high in the services industries. There is great opportunity for sharply separating work into natural grouping and designing the different kinds of work into distinct positions, and thus using effectively such scarce skills as are available. Why tie up a salesman with paper work and adjusting accounts when he could be searching out new markets?

Careful and rational analysis of the work will distill out that repetitive physical work and routine thinking which is susceptible to mechanization. Computers in banks today read checks, post, resolve individual account balances and render statements all at incredible speed. If such operations do not warrant purchase of a computer or similar machine, in a given case, co-operative contract-service systems, which will perform work on a computer for a number of concerns, are springing up all over the country.

But the truly great promise for very great productivity gains in the services area comes from the potential of freeing the creative capacity and initiative of all employees by structuring maximum opportunity for creativity and initiative into all positions.

Strangely, the services industries in large part have resisted this approach. For example, many retail chains still operate under a philosophy of centralization of decision-making — at least with respect to purchasing and merchandising. Store managers must take merchandise ordered by headquarters, in numbers ordered by headquarters — and in some cases this is the only merchandise they can get — and they must display such material in precisely the way prescribed by headquarters, with specific proportions of counter space to be devoted to each product as dictated by headquarters. Prices are always set by headquarters. Other rigid requirements are established, and close "controls" operated by headquarters.

Yet, it would seem that geographically dispersed units would ideally lend themselves to decentralization of decision-making. Only the local store manager and other local employees are truly aware of local trends in consumer taste and competitive pricing. Only they have full knowledge of other local situations. And only they are in the position to make the quick decisions so often necessary to capitalize on shifting conditions.

To deny local personnel the opportunity to give full scope to their selling, merchandising, managerial and other talents is to deliberately undercut productivity—and in the process to reduce profits. It is simply damming up useful resources.

Could we not recognize that work is both physical and mental, and could we not develop new concepts and tools that will permit structuring creativity, initiation, and decision-making into all positions — even to the farthest out in the organization structure as is consistent with availability of information, competence and appreciation of impact? And will this not free managers, both regional and local — who have faith that most employees will want to do the job right the first time once the common purposes have been communicated — to devote their efforts to other more productive work?

But if local managers are to assume these more challenging responsibilities, they will need to develop the competence, and assume the broader vision and understanding that headquarters personnel possess today as to the "fit" of the local environment into the overall distribution process. How can this development be best accomplished?

With the high level of skills and knowledge required in these services industries, how can we aid all employees in attaining the required competencies? How can we inspire all employees, as required, especially those in outlying branches to develop the needed skills in market research, advertising, selling, and the very important product service, especially in view of the different and multiplying technologies incorporated in new products hitting the market today?

Most important, how can we facilitate the transfer of knowledge necessary for the orderly succession of managerial responsibilities in so-called "one-man" organizations? And in all services industries how can we bring about managing on a really professional basis?

The Third Area — Integrating, Motivating and Communicating

With a great number of widely scattered units and employees, how can those employees in distant outlets be

motivated to assume work and teamwork responsibilities voluntarily?

What are the implications of the fact that a very high percentage of employees in these services industries contact customers? And how can these relationships be made more effective and geared to building better businesses? What kinds of attitudes are required?

How can methods and tools be found for communicating knowledge developed in one independent unit to thousands of similar independent units, thus multiplying results? How can we determine what information is needed in the dispersed units, and how can we assure the communication of the *right* information to the *right* places at the *right* time?

The Fourth Area — Measuring

Today, frankly, even the most basic tools needed for work in this area have not been developed. How can productivity, and value added, be defined and measured? How can we measure the productivity of a specific element of work, and compare it with its cost, to determine whether that work should be performed by us, or should be purchased, or whether it should even be performed at all?

How can we determine to what extent distinct elements of work contribute to objectives? Can units, coefficients, and index figures be developed to use as the necessary yardsticks? And, one of the most challenging problems — how can the effectiveness of advertising versus personal selling be measured?

And as you factor these thoughts into the image of the future *you* have filled out tonight, do you see these measureless opportunities for doing *different* kinds of things in the changing environment of the areas we've always worked in . . . and for forging *new* thinking in the completely unexplored areas — just now really opening up — but teeming with possibilities.

But will you be able to really sense and capitalize on the individual opportunities if you do not now raise your sights beyond your current experience, beyond the kind of work you have always done? Will you not have to change your focus and start to develop new approaches *today* — and I mean that literally—to successfully tackle the future opportunities inside the factory? And will you not have to broaden your vision if you wish to be part of the fast expanding world outside the factory?

These are questions you will have to answer for yourself:

As an individual, as you plan your own self-development;

As a member of SAM's New York Chapter, as you participate in establishing its objectives and direction;

As a member of SAM nationally, where, as future leaders, you will shape its future nature and thinking.

Should not you — especially you *younger* men — *and* SAM, pioneer the younger men — *and* SAM, pioneer the new thinking, the new concepts, the new tools? That is for you here tonight to answer, and to do something about. And who knows, perhaps one of you gentlemen will be the "Taylor" of the next generation! ■

Simulation

In engineering and the physical sciences, laboratories and models have existed for many years. Production systems, however, have properties, in addition to their physical characteristics, which must be considered; for example, the information content of documents, points of control in the factory, data flow to and from the factory, and interaction of decisions on problems of lot size, routing, scheduling, temporal relationships, planned dates, material flow, machine processing, etc. A production system, therefore, differs from other systems in that it is generally large scale, involves man-machine interactions, and has variability both of input and performance. Delays may be due to machine breakdown, lack of tooling or material; whereas, changes in worker performance, absenteeism, material spoilage, rework, etc. are examples of variability of the system operation. Fluctuating demand, changes in product mix, seasonal effects, delivery lags, incoming quality, etc. are examples of variable inputs to the production system. It is the combination of these many factors which has, in the past, precluded the use of physical models for production systems design, other than the actual factory.

Simulation, therefore, is an attempt to imitate the behavior of a system to study its reaction to specific changes. The results permit one to gain insights, test hypotheses, demonstrate or verify new ideas, establish feasibility, compare alternatives, test complex design, or train personnel. Computer simulation, however, is seldom an exact analogue of the actual system. Rather, the majority of simulations are performed on digital computers which can only approximate continuous, simultaneous activity. If the elements and properties of the system have been properly defined, then the parameters and variables can be readily controlled and measured.

To simulate factory operations, then, it is necessary to have a model which provides a formal statement of the system behavior. This model may be a symbolic model, a mathematical model, or merely a descriptive model. The model should be constructed so that the parameters, variables, and forcing functions correspond to the actual system. The parameters should include properties which are sufficient to define the behavior of the system; whereas the variables are the quantities which describe the behavior for a given set of parameters. A forcing function provides the stimulus, external to the system, which causes the system to react. For example, job orders which enter the production system cause men to work, machines to run, queues to form, etc. In this way, job orders become the forcing function for the system. Whatever particular form is used, a model provides the frame of reference within which the problem is considered.

Wallace E. Barnes: "Application of Computer Simulation to Production System Design."

A Practical Approach to Management Planning and Control

by Edward G. Koch
Professor of Business Administration
University of Toledo

THERE is nothing new in the concept of management planning and control. It is successfully practiced in many owner-operated business firms on an informal personal basis. But, with the rise of decentralized companies, operated by hired managers, a new feature has emerged. Management planning and control has become formalized and accepted as a means of implementing company policies, objectives, and strategies for both the short-term and the long-range.

The tempo toward formal business planning and control has speeded up in the past decade. While not new, the planning and control principle has now only gained wide acceptance. This fact is clearly evident in meetings and seminars of the American Management Association, in conferences of the Controllers Institute of America, in meetings of the National Industrial Conference Board, and in tons of professional business publications.[1] Equally important, management planning and control has become a specialized field, lending itself to systematic study, and, as such, is one of the fastest growing fields in business administration today. Now would seem to be the time for University educators to recognize this trend, even though a generally accepted classic does not exist as yet on the subject of "Management Planning and Control".

The term itself is both misleading and a misnomer. Management planning and control does not literally describe the function. It does not refer to the planning and control *of management* but rather to the planning and control of the business *by management*. Hence, other names, as for example, Business Planning and Control, Company Forward Programming, Planning, Managing and Measuring a Business, and Corporate Planning and Development are also in common usage. Like other new concepts, such as the theory of "monopolistic competition" which does not refer to the competition of monopolies, the choice of the given name oftentimes leads to unfortunate misconceptions. However, the term, "management planning and control", as adopted by the Controllers Institute of America, will be used and the function explained in the discussion.

The purpose of this discussion is to explore the following pertinent questions:

- What is management planning and control?
- Why is it significant?
- How is it best accomplished?

The Meaning of Management Planning and Control

A formal and well-organized management planning and control program bridges the responsibility of professional management from the stated purpose and philosophy of the business to operation success — now and in the future. A leading exponent of the technique, Ralph J. Cordiner, president of General Electric Company, holds to the view that the optimum contribution to the economic future will result from company managements with ample vision "to see with some clarity and confidence the needs of tomorrow and beyond tomorrow".

Management planning and control, broadly outlined and sytematically approached, includes: (1) the preparation of the stated purpose and philosophy of the business, (2) the establishment of specific short- and long-range objectives, (3) a system of organizing and programming for the attainment of the short and long-range goals, and (4) monitoring, follow-up, and revision of plans and practices as required by changing conditions. An essential aspect of the program should not be overlooked. Management planning cannot be separated from management organization and control. In fact, successful planning will result only from efficient organization and control. In short, MP & C is a full manifestation of the executive process — organizing, planning and controlling the business enterprise.

When the significance of business planning and budgeting became apparent after World War II, the Controllers Institute, through its National Committee on MP & C, endeavored to bring about a wider acceptance of the management planning and control concept as an aid to business stability and long-range profit return on capital within

1 See, for example, *Management Planning and Control: An Annotated Bibliography*, 175 pp., 1955; *Management Planning and Control, A Descriptive Reference Guide*, Supplement Number 1, 122 pp., 1956; *Management Planning and Control: The Heinz Approach*, 113 pp., 1957; *A Case Study of Management Planning and Control at General Electric Company*, 63 pp., 1956, (Controllership Foundation, Inc., New York).

the business enterprise. Work was directed in part to improve the controller's awareness of his responsibilities and opportunities in the management planning and control function, and also directed to business management in general to promote an awareness on the part of corporation executives of the effectiveness of management and control as an aid to the long-term profit program.

To this end, the Controllers Institute adopted a "Blueprint for Management Planning" (October 15, 1949), setting forth a statement of principles in a fully integrated system of management planning for executives who recognize the needs of their companies and the value of the orderly utilization of present and proposed resources on the basis of the greatest measure of profit return over a period of time. The six major steps are as follows:

1. Establishing the goals of the business.
2. Forecasting conditions.
3. Developing plans.
4. Preparing and scheduling estimates.
5. Controlling commitments and expenditures.
6. Reporting and appraising results.

The statement of principles does not advocate any detailed procedures, organizational planning, or management techniques: this it leaves to the ingenuity of company management. It offers no specific suggestions, except the implicit one that the program should be fitted to the individual situation.

For making clear the coordinated and flexible approach, as well as the full meaning of management planning and control, the Controllers Institute advocated the following concise but fully adequate definition:

"Management planning and control refers to the organization techniques and procedures, whereby short and long-range plans are formulated, considered, and approved; responsibility for execution is delegated; flexibility to meet changing conditions is provided; progress in working the plan is reported; deviations in operation are analyzed; and corrective action required to reach the desired objective is taken." [2]

Those in business and industry who successfully participate in the working of management planning and control functions recognize the validity and effectiveness of the general statement of principles and the definition of MP & C.

Yet, there are many who misunderstand the complete planning and control concept. A sound program needed to provide for scientific forward planning is not mere forecasting and checking results — not bits and pieces of cash, profit and capital investment projections, used for crisis decisions — but rather the principal emphasis is on the coordinated approach of short-term and long-range planning.

The key to the coordinated application of the planning and control concept is cogently summed up as follows:

"By these devices of control (referring to plans, forecasts, budgets, standards), all units of the business are coordinated. The simple triad, planning — reporting — action, becomes the guiding principle of the business. When this state of thinking has permeated the organization — when this *modus operandi* has become second nature — management potential reaches a new altitude and a business responds with superior performance." [3]

In a word, management planning and control is a skillful balancing of short-term budgeting and long-range programming, effectively coordinated by managerial ingenuity in working, revising, and improving the plans toward the company objectives.

Importance of Management Planning And Control

Formal management planning and control in the longer-run is a means of making things happen which would not otherwise occur within the company. It is an advanced and unique process, not to be confused with simple types of planning and forecasting having more limited and less ambitious purposes. A well-conceived and organized corporate forward planning program guides the management on a coordinated basis toward making trends, rather than following them.

In effect, it marks the ultimate in managerial skill and achievement. As Peter Drucker elegantly portrays in his book *The Practise of Management,* (New York, Harper, 1954): "Managing a business must be a creative rather than an adaptive task. The more a management creates economic conditions or changes them rather than adapt to them, the more it manages the business." This is a restatement of the Schumpeterian view in Drucker style of economic growth and development by the "perennial gale of creative destruction." This is the process of endless competition with leaders in new products, new designs, new methods and new services trying to keep a step ahead of followers, and followers catching up with the leaders.

Creative management uses the planning and control concept as the helm to ride out and stay ahead of the "gale".

Management planning and control in its present most highly advanced form is organized formal planning and control to achieve optimum performance in the development of total company operations for the immediate and the practical future — generally, five or ten years, and in extreme instances, twenty years. A five year period is common practice but National Industrial Conference Board studies show a tendency to lengthen the time span. More than two-thirds of the companies with forward programming plan from five to ten years ahead. This makes good sense, for what is being done or not being done today will echo back five or ten years from now, especially when you consider the time required for product development, market development, resources development, facilities development and manpower development. A comprehensive program includes planning in all functions, divisions, products and operations, in addition to a master total company plan which is more than a sum of the parts of the company as presently constituted. Significantly, an overall company plan will readily point out the real advantages of programming a company to new products, new markets, new techniques of production, new methods of operations and new philosophies of management beyond anything that could be ascertained merely from an extrapolation of the current existing phases of the business.

The question will inevitably arise: Isn't this too much "crystal-balling" in the light of all of the risks of the future? There are many people who think so. However, perceptive businessmen are convinced that it is possible to plan systematically and with a fair degree of rationality toward the future.[4] Here is a typical example of this cumulative thinking in management circles:

Clinton F. Robinson, president of Carborundum Corporation says: "I subscribe to

2 Year Book 1952, Controllers Institute of America, New York, p. 87.

3 James L. Pierce, "The Planning and Control Concept", *The Controller,* September 1954, p. 403.

4. For a full discussion of this point, see, for example, Peter Drucker, "The New Management Tools — and What the Manager Can Expect of Them, "American Management Association, *General Management Series* No. 176, 1955, pp. 5-7; also, Herrymon Mauer, "The Age of Managers", *Fortune,* January, 1955, p. 84.

the view that we can, within fairly narrow limits, control the fate of our companies if we plan properly. In spite of all the unknowns, uncertainties, and imponderables, if we analyze the situation carefully, we can arrive at a reasonable degree of rationalization. The end result is some course of action that has a good probability of being successful and leading us to where we want to go."

"The significant thing about business planning is this: If, as individual companies, we do not practice it and do it well, with a broader concept than most of us now think of, we are going to fall by the wayside."

The principle advantage of management planning and control is in furnishing a guide to management decision and action. Complacent drifting or gradual, undetected slipping behind cannot happen. When management sees poor past performance, alibis are bound to flourish. When management sees poor performance in the future, forthright action is apt to be pursued.

The objectives toward which management planning and control should work, indicate the obvious benefits from a successfully applied program, and are generally established along these lines: (1) to improve and stabilize profits and to improve return on investment; (2) to bring marketing, advertising and sales promotion techniques up to date; (3) to capture and maintain an adequate share of the market; (4) to capitalize more readily on all the new developments in the industry; (5) to determine effectively the requirements for management, supervisory and technical personnel and to provide a program for developing these people to be available when they would be needed in the future; (6) to provide more definitely for future fixed capital and working capital needs; and lastly, (7) to successfully effect overall integration and coordination of planning for future growth.

The post Korea profit squeeze, even with higher productivity and prices, forces an alert management to creative rather than adaptive tasks. Stagnant low-profit product lines must be culled and replaced by newer and better products with higher profit opportunity. Many companies hesitate to face this issue. Creative management, however, recognizes that a profit improvement program is no longer only a year-to-year budget affair, but also a long-range challenge to stay successful. Consequently, a balancing of short-term and long-range organized plans is not merely desirable but indispensable for corporate health, vigor and growth.

Launching a Management Planning and Control Program

The "how-do-you-do-it" question of management planning and control is highly controversial. And there is no point in entering any debate here.

Perhaps, there are no two companies which approach the problem alike. For instance, some companies, like General Electric Company, use advanced scientific techniques, such as operations research, linear programming, cybernetics, game theory, electronic data processing, and so on, while other companies, like General Foods Corporation, depend more upon the analytical ability, seasoned experience and marketing ingenuity of management.

There is, however, a first premise which may be drawn and which should avoid much debate. That is, the topic is best divided into two parts and should be so treated. Furthermore, these two parts will be discussed in terms of the best composite experience of those companies which have been through management planning and control rather than in terms of advancing any particular dogmatic point of view.

The first part is the relatively unchanging determination of the stated primary purposes and philosophy of the business and general objectives of the organization; this is the administrative aspect. The second part covers the organization, planning and control framework to successfully realize the desired goals of the business within a stipulated period of time; this is the executive aspect.[5] Each of these parts is not singularly important, but fused together they solidify the planning and control function.

Administrative Aspect

Setting forth the stated business purposes and philosophy is often overlooked in the planning and control program. From the experience of others, companies can save themselves false starts and frustrations by making this the bedrock foundation of the program. It may also be added that corporate by-laws are not usually adequate for this purpose. Without a clear statement, the more specific plans and programs wander off on a tangent.

The stated business purposes and philosophy should be spelled out in some detail. Management sometimes shies away from this task or sets forth crude definitions in absurdly fundamental terms, such as creating the business for a profit. These are of no real value and as sole guides might lead to disastrous results. A definable purpose and set of objectives should be built upon profits desired, markets to be exploited, the types of products and services which the company renders, to what types of customers, and with what obligations to customers, employees, stockholders, community, and the trade. The real nature of the business in the marketplace will affect selling, product planning, promotion, engineering, manufacturing, and research activities. It must be understood, agreed upon and communicated through the organization prior to charting the future course of the company.

A well-conceived statement of policies and objectives, such as that of H. J. Heinz Company[6] is a prime requisite for launching an effective management planning and control program in the company. This published statement of Heinz is supplemented by "private" written statements setting out separately and specifically the long-range profit goals for (a) each of the Heinz Companies, and (b) the consolidated Heinz organization. These "confidential" goals are designed for the working guidance of the Executive Committee, the Operating Committee and the management committees of each of the subsidiary companies.

Multidivisional companies with successful planning and control programs establish long-range profit, sales, investment, and share-of-market goals for each division or type of business within the company. The automotive and electrical goods industries are good illustrations. Multiproduct companies often set these same goals for each product line. The processed food and tobacco industries are a case in point. In all instances, the short-term goals are set to ultimately attain the long-range objectives for market penetration, profit return on investment and other objective measurements.

Thus carefully developed primary purposes, general objectives and defi-

5. See, for example, *Harvard Business Review*, H. Edward Wrapp, "Organization for Long-Range Planning", January-February, 1957, p. 37; Bruce Payne, "Steps in Long-Range Planning", March-April 1957, p. 95, see also p. 111; David W. Ewing, "Looking Around: Long-Range Business Planning", July-August 1956, p. 135; Henry C. Thole, "Looking Around: Management Control, November-December 1954, p. 141.

6. See this statement in "Management Creeds and Philosophies", American Management Association., Research Study No. 32, 1958, pp. 114-7.

nite goals establish a firm set of ground rules for the necessary detailed function of management planning and control.

Executive Aspect

When the ground rules are firmly set, the actual practice of MP&C, as previously mentioned, may vary among companies, and sometimes rather widely. Notwithstanding, for the individual company there is a program of formal planning and control which when fully developed is destined to turn the stated purposes and objectives into a reality.

From the composite experience of companies with forward programming, we know that the successful launching of such a program depends upon certain fundamentals, in addition to well-conceived primary purposes and general objectives. These requirements will now be briefly sketched.

1. The president of the company must be highly enthusiastic in his support and must be willing to spearhead an organized MP&C program. Otherwise, it is doomed to failure before its start.

2. An educational period of roughly six months should be spent in explaining the proposed program to the entire key management organization. This is a vital step for total support. Management levels down to department heads will then have a uniform understanding of the planning and control system and how it may affect their decisions and actions.

3. An introduction period of about six months may be occupied in parcelling out the programming task to division or department managers. A slow methodical painstaking start will actually save time and improve the results in the long-run. Responsibility management will not be bogged-down in the complexities of the program, will not be unprepared in adjusting their organizations for the effort and will not spend an abnormal amount of time on the problems of MP&C. The program might be started by requesting each profit center manager to prepare sales projections of existing products for a designated time span, accompanied by their analysis of markets, types of customers, present and potential competition. Then at a later date, the following may be introduced piece-meal: profit and loss projections, manufacturing requirements, investment needs, manpower forecasts, new products and projects, and so on.

4. Planning and control means management by objectives and management by participation. Consequently, the operating executives of the divisions or departments should do the major share of the actual programming. In so doing, the work is accomplished where the greatest specific experience is lodged. Furthermore, it is less likely that any facet of the business will be overlooked. "Bottom-up" planning in multidivisional companies is best achieved under fully decentralized accounting as Chrysler Corporation and others learned the hard way. The tools of management belong with the responsibility of management.

5. Senior management should provide for the coordination of programming into a master plan. When this is first put into operation, the functions of product planning, marketing, research, manufacturing, finance and other functions must be carefully dovetailed by divisions and product lines into an overall company plan.

6. Short-term and long-range goals should be established on a realistic basis. They should be neither too high to upset morale nor too low to become a cropper in the other direction. Improvement must be down-to-earth in terms of what other companies are achieving and the capabilities of the individual company. The goals should be within reasonable attainment and management should know of the objective measurements by which they will be judged.

7. Short-term and long-term plans should be tied together. One of the significant attributes of long-run planning is the perspective it gives to annual budgeting. Fiscal year planning has a tendency to become merely a historical projection until it is given real meaning in relation to the long view. According to the Heinz Company, the meshing of these plans saves you from "growing like Topsy" and avoids "fire-engine" decisions.

8. Long-range planning should be highly flexible according to changing conditions. Even a five-year plan rigidly adhered to could lead to ridiculous ends and subsequent abandonment. Most companies use a sliding period, adding one year and dropping another, modifying the concept of the future as required.

Attention is now directed to the specific phases of organization, planning and control. In the previous discussion of the necessary safeguards to launching a successful program, some of the points already have been covered. Others should be touched on now.

Organization

Since forward programming is a recognized and important function of management, inherently top-management, in the person of the president or the chairman is responsible for its direction and coordination. Group or joint action is indicated by many companies in the form of executive committee, planning committee, forecasting committee, or central control staff as the source of direction and guidance for planning and control activities. But in all these instances the president is either a member of the group or the person to whom the committee is responsible.

Quite a number of companies have full-time staffs for management planning and control. In any event, the most important staff functions are coordinating the individual plans into master company plans, as well as economic forecasting and analysis. The total company plans generally include for each division and department, and product lines, if possible, the following projections: total market, share of market, sales, costs, and profits, return on investment, total assets employed and other pertinent factors.

Outside consultants are often used for guidance particularly in launching forward programming techniques and in evaluating their effectiveness. Frequently, companies employ outside consultants for periodic independent and objective appraisals of their marketing, finance, product development and administrative methods. Roughly one-half of the companies in a Conference Board study employed outside consultants in some phase of their management planning and control operations. In no case should an outside consultant or economist develop a company plan and hand it to the top management; this is an abdication of prime executive responsibility; besides, it won't work. Planning and control is a tough job that cannot be avoided by top management.

In a number of companies with planning and control programs, the president works with another top executive, such as the assistant to the president, the financial vice-president or the executive vice-president. According to

a recent survey by the National Industrial Conference Board, the officer, next to the president, most frequently reported as being singularly responsible for directing and coordinating forward programming, is the controller.[7]

Planning

The planning phase is best treated in two steps:

First, background data, past history of existing products, an appraisal of the factors which influence them and related economic projections should be the starting point. Then detailed product projections should be developed in terms of sales, profits, market penetration, return on assets, investments and other pertinent trends. While planning techniques differ from company to company, it is important to keep in mind that our tool kit of economic analysis, business information, marketing data, consumer surveys, expectations studies, and national income system of accounting is bulging over. A company's ability to plan ahead depends in part upon the skill with which these tools are put to work.

When the projections of existing products and operations show the deficiencies from long-range company goals, the second step of planning begins. In this step, new products, new functions, and new projects are taken into account for attaining the company goals established, and for checking with the company statement of primary purposes and general objectives so as to keep all controlled activities on the track previously determined to be most desirable. In the main, specific programs which may develop throughout the organization will not be totally new. For the most part, they will be former programs in product planning, product development, market research, finance, research, manufacturing and selling with new life, new enthusiasm, new objectives, new meaningfulness, and new coordination. Approved long-range programs are developed for the practical future as the company sees it, and correlated with the short-term operating plan.

Control

The success in administering and controlling planned programs is not so much a matter of technique, as it is of management itself. Referring to the accomplishments of General Motors Corporation, Mr. Harlow Curtice, president, had this to say: "The most important single element responsible for our success has been management — our organizational approach and attitude of mind".

What he meant was this: the General Motors management understands, accepts and operates against plans, objectives and goals rather than against supervision. Very few businesses either fully understand or have adequate controls for this major control problem in the modern management scene. Furthermore, a creative management excels in the qualities of forward thinking, return on investment mindedness and a positive approach. These qualities reflect the all-important "attitude of mind".

More and more companies are subscribing to the thesis that any program really worth having requires an objective measurement for the control of the program. Accordingly, General Electric Company is developing short and long-range goals for its particular control requirements in return on investment, share of market, productivity, product planning, personnel development, employee attitudes, and corporate citizenship.

For administrative purposes, many companies find that an annual or semi-annual review of management planning and control is desirable. At such times, the projections are up-dated and strategies developed for a new "moving period" according to the selected time span. For the most part, such reviews are conducted at profit and capital budget time so as to blend short and long-range planning together and to take any necessary corrective actions.

Conclusion

A concluding reference should be made that management planning and control, when it is done well, insures a prosperous company future in an intensive competitive environment. The remarkable post-war development of the Ford Motor Company is a classic example of this point.

Management planning and control is not merely a basic tenet of good business management; it is not merely forecasting for its own sake, nor merely checking and analyzing results; it is much more comprehensive by emphasizing the coordination of plans. In full operation through the entire organization, it means the orderly coordination of accepted plans and secured controls to definite predetermined objectives. It means that every activity in the business is working on a coordinated basis toward the attainment of those specific goals. The effectiveness of the planning and control program is not measured by the accuracy of long-term forecasts, but by the sustained managerial effort and achievement toward the corporate objectives established. Out of this, superior business management performance results, like that of General Motors Corporation and the du Pont Company.

Successful forward planning programs are not merely confined to leading or large companies. The recent National Industrial Conference Board survey, previously mentioned, discloses that about three out of four companies of various sizes and in various industries are convinced that formal company programming is essential and pays off.

Management planning and control is gaining ground but not yet fully accepted. It is true, that at best, this function is no better than the company's ability to plan for the breakthrough to the future and then act, which is up to management. Then too, management may get too imbued with the statistics or interpret them to fit preconceived ideas. But the greatest single problem seems to be that too many managers spend all their time in the hurly-burly of current operations and profits.

A prominent educator once said that American businessmen usually spend so much time on things that are urgent that there is no time left to spend on things that are important. One of these important things is management planning and control. ■

7. The Conference Board *Business Record*, October 1956, p. 439.

Human Values For Management Engineers*

by Louis E. Newman
President, Smithcraft Corporation

THE HUMAN side of managing is based on philosophies[1] that are put into practice by actions. One is "thinking", the other is "doing". Good intentions poorly carried out may accomplish little worthwhile. In fact, it can be assumed that most of us want to do what is right; that we believe and try to practice the Golden Rule; that our mistakes in human relations are not caused by intent to do wrong. If you accept these as true, then it follows that we should attach as much importance to our methods for carrying out our intentions as we attach to the intentions themselves.

A few years ago this was brought home to me when we tried to upgrade some cutter-grinders. There were sixty-five men in a fenced-off enclosure sharpening tools used in a large shop. These men were paid a straight hourly rate, which was low compared to the pieceworkers operating production machines. When the need came for more production workers, the opportunity to get higher earnings was first offered the cutter-grinders. It meant a change from day-work to piece-work; a change from one foreman to another (both foremen were well liked); a change from work inside a fenced enclosure to the open factory floor; *and an increase in earnings in the order of 30%*. All of the men, to whom the offer was made, turned it down! Why? Probably because of a distrust in the intentions of Management; a belief that the move was a threat to their security. The resistance of these men to a move that would help them, brought into sharp relief what we can take as our first principle.

Principle No. 1

It Is Not Enough for Managers to Be Well Intentioned; Others Must Recognize Their Good Intentions

To some extent there is danger in a statement like this. Unprincipled managers could use the tools of the propagandist to create an illusion of good intention to cover bad intention. It is my belief, however, that in our American business world of today, the much more serious danger lies in employees believing that their managers have bad intentions when the facts are just the opposite.

I saw a letter a few weeks ago with this opening sentence: "All of us realize that you want to cut our pay and take away our jobs, but there is something else I think you should know". This was a letter from an employee to his General Manager. Strangely enough, the content of the letter was intended as a constructive suggestion and the opening sentence was not related to the other matter in the letter. It was simply stated as a beginning; the kind of statement a man might make to let you know that he understood what you were trying to do. In that particular case, Management was trying to preserve job security for the employees by a number of constructive improvements. But all that some employees could see was the short-range loss to them of fewer jobs as better methods were introduced; less pay as needless overtime was cut out; and greater chance of discipline if they did not do their work. They did not see the long-term gain to all employees in future years. They did not recognize the good intentions of the boss.

It isn't only the employees who must recognize the good intentions of a Manager. All of us have seen the merchants, the mayor, and the clergy of a town turn against a Management during a strike. No matter how good the intentions of the Management, it matters little unless others believe them to be good. How to gain acceptance of good intentions is the basis for our second principle.

Principle No. 2

Use the Soft-Sell Approach; Its Results Are More Likely to Outlast the High-Pressure Methods

By "soft-sell" is meant an appeal to reason slowly and carefully built up over a long period of time. "High-pressure" selling, on the other hand, is aimed at arousing the emotions. A wildcat strike is often triggered by an emotional storm. But there is something sobering about marching up and down as a picket in front of a plant which employees believe is managed by well-intentioned men. The solid confidence of an employee group is best earned through proper actions carefully and continuously interpreted to the employees. There is evolving a science of "communication". Its aim is to interpret facts and promote under-

* A talk presented at the 14th Management Engineering Conference sponsored by ASME and SAM at New York, April 23, 1959.

standing among all those to whom a business has a responsibility.

We need to help our employees "count their blessings" in areas like these:

- — their freedom of choice of employment,
- — the steadiness of past employment,
- — the opportunities for advancement,
- — the benefit plans of the Company, and their value to each employee,
- — the adequacy or excellence of working conditions, including, light, heat, ventilation, and protection from toxic materials,
- — the safety on-the-job compared to off-the-job,
- — the good intentions of the Company's Management.

In telling employees about a Company there is an important principle to be followed in order to build credibility.

Principle No. 3

Tell Employees Things That They Can Quickly Check for Themselves

Most employees can't tell the difference between what Management *knows* to be true, and what it *thinks* might happen. They have no way of distinguishing between *promises* and *expectations;* promises of steady work based on backlog of orders (they know that orders can be canceled), and *expectations* of steady work based on improving economic conditions. I was not sufficiently mindful of this principle a year ago when I told our employees that "it looked as if we would have steady work for most of them in the year ahead". Mathematically my prediction was probably true, but you would have a hard time convincing our employees of it! What happened was this: We normally have a sharp rise in orders immediately after the first of the year. Last year we had it, but it was delayed by the recession some six or eight weeks and was lessened in amount. The result was that our inventories built up so rapidly that we had to lay off about 10% of our work force. In the employees' minds I was wrong — and whether I am wrong about a *fact* or a *prediction* makes no difference. Too many of them see things in the simple light of black or white; grey areas are too complicated.

In the future I intend to do more predicting to employees in the areas within the control of the Company and less in the areas outside the control of the Company. For example, we erected a large sign on the plant advertising our fluorescent fixtures. Just before erection started we announced it to the employees. They could thus see us carrying out our promise. Similarly we told them in advance, but only a short time in advance, of our plan to build a parking lot; of our plan to number the buildings; of a re-arrangement of the assembly floor. Our attempt is to create in their minds that we will perform at least equal to our promise. They will form this opinion only if they see a close relation to promise and performance.

One other important factor in improving relations with employees is accomplished by this practice. It can be stated as a principle.

Principle No. 4

Give Employees a Sense of Participation in Changes Affecting Them

This principle in no means is intended to take away from Management its right to manage. In no sense is it intended to suggest committees or other ways by which managerial effort is diluted or impeded. Instead, it is a recognition of people's natural resistance to change.

About fifteen years ago I was manager of an office in which we had seven antique typewriters. Without consulting the typists I ordered seven handsome electric typewriters. These were delivered and plans made to give the girls the minor retraining necessary so that they could learn to use the new machines. You've probably guessed what happened! I had an insurrection on my hands. Two of the girls bluntly refused to take the new typewriters. Of course, in the end, all of the girls took the new machines, and after a few months would have rebelled had we given them back their old machines. But what an important lesson I learned! I could have saved all of us time and temper if I had *in advance* gone over with the girls what was being planned with them.

The typewriter episode is a simple one, but the principle is broad. It should be applied as broadly as possible to every change affecting employees; organization change, physical change, compensation change, product change, facilities change, there are probably few if any changes that should be excepted.

The preceding principles lie in the areas of persuasion. They are methods of making management's good intentions known to the employees. They are ways management can try to earn the willing acceptance of its leadership. Sometimes these are not enough. Sometimes relations between employees and their managers have been bad. The poor relationship may have been caused by factors within or outside of the control of management. But this does not lessen the need to improve the situation. So we come to some principles in the area of conflict.

It is an old rule of military strategy that conflict is apt to occur when opposing forces approach equal strength. This rule may be just as well applied to an industrial situation.

Principle No. 5

Conflict Can Be Avoided If the Opposing Forces Are Kept Unequal in Strength

We have just had a strike. Its origins reach back many years, but there were indications becoming apparent a year or more ago that we might be headed for a strike. A year and a half in which to establish a sharp change in management-employee relationships was not enough time to avert the strike, although it was time enough to keep the strike short in duration and settled without the deep scars that often follow a strike. What we did and what we failed to do may help others understand their own situations. The full appraisal of our own efforts cannot be made for several years to come. So part of this is theory and part is fact.

When management is strong and labor weak, conflict is unlikely. Many years ago Henry Ford could have said to strikers, "I can afford to let this strike go on indefinitely, but can you?" It was many years before labor's strength was great enough to challenge Henry Ford.

Conversely, when management has felt much weaker than the Union representing its employees, threatened strikes are apt to be settled quickly by management's "giving in". In our case, we had had relatively peaceful relations with the Union for many years. One of the reasons for this was that they felt stronger than we were.

We needed the Union label on our fluorescent lighting fixtures, and our management, in order "to keep peace in the family" usually acceded to the demands of the Union. Gradually, over the years, the incentive plans became loose, extra people got on the payroll, featherbedding became prevalent. In good times extra costs can be tolerated. In bad times extra costs provide leaks in the industrial ship that can sink it.

Dr. Irwin Schell of M.I.T. has said that you can have change without improvement, but *you can't have improvement without change*. We have been making changes of personnel and changes in philosophy during the last year and a half that have greatly strengthened our management organization. And the Union has been testing this strength each step of the way. While we have been shaking out extra costs; cutting out needless overtime; tightening up standards; and installing better methods, the Union has processed a series of grievances through to arbitration. The extent to which they went to test our strength is illustrated by one arbitration over our right to release a fine but decrepit old lady of seventy-eight years of age! The open break, represented by the strike, simply signalled that the opposing forces now felt about equal in strength. In fact, one of the local Union leaders commented to one of our supervisors in explaining the reason for the strike, "We thought it was about time we knocked the big guy down to size".

What of the future? If we do our job of managing well, and *our employees recognize it as such,* we should be able to build up such an acceptance of our leadership that collision will not re-occur. It is less apt to re-occur if we can keep the adversaries mismatched. And we must do this by making management strong, not by attempting to weaken the Union in any way.

There are principles we can follow that should help us maintain our strength.

Principle No. 6

In Disputes With the Union, Give Short-Term Gains in Return for Long-Term Gains; Give on the Emotional Issues in Return for the Non-Emotional Issues

Union officers hold political office. They are elected to their jobs and must run for re-election periodically. And you can be sure that the members they serve are not satisfied with long-term promises. They want results! Now!

> Likewise, linear programming is merely the name for a mathematical technique for obtaining reasonably accurate answers to problems which we industrial engineers used to approximate or roughly solve by qualitative methods. I see no reason to consider this a new field, no reason to give it a new name and no reason for not weaving the use of these procedures into whatever type of industrial engineering activity for which they may be used. Indeed, we shall only defeat our objective of progress and further, destructively splinter our industrial engineering profession, if we do not *add* them to our body of industrial engineering knowledge.
>
> ***Marvin E. Mundel: "Linear Programming for the Industrial Engineer."***

An understanding of this principle helped us settle our recent strike. The short-term highly emotional issue that had excited our employees involved the discharge of some employees who had participated for the second time in a wildcat strike. The long-term issue involved the introduction of new methods and a modified compensation plan. It was our belief that we could win both issues at arbitration, but at the cost of a prolonged strike and an embittered employee group. We believed that our Union officers were well intentioned and that we could strengthen our own position if we made major concessions in bringing back to work the discharged employees. (Bear in mind that their offense was of a political nature.) We agreed to a lesser discipline than discharge and in return got acceptance of the long-term issue.

The strike brought out the final principle we will discuss at this time.

Principle No. 7

No Law Is Stronger Than the Willingness of People to Enforce It

Perhaps you thought of Prohibition as an outstanding national example of this principle. Our strike gave us an example much closer to home. Its duration was only a week, but it was a "wildcat" — that is, it was a strike in violation of a no-strike clause in the Union contract.

The contract provides for a step-by-step procedure to settle a grievance with arbitration as the final step. In our case the Union took the first step in the grievance procedure then walked out. The Company took the position that it was willing to have a neutral third party decide every issue; not only who was right, but what discipline, if any, should there be. The Union took the position that they would not arbitrate any of the issues.

Here was a strange position. We, the Management, felt we could win every issue. The Union leaders, speaking off-the-record, agreed we could win every issue. So here we were with a work force feeling they were morally right even if legally wrong.

In theory, the employees are protected by the "no lock-out" clause in the contract; the Company by the "no strike" clause. In fact, however, the lock-out is a most unlikely tactic for a company to take, and the no-strike clause may be more of a protection to the employees than it is to the Company. In our case the employees refused to enforce the no-strike clause even though it meant loss of pay to them. To some extent they were not enforcing their own law.

The strike is the dramatic disregard of an agreement. Less dramatic, but equally unmindful of a contract, is the insidious "slow-down" that many industries have experienced in one way or another.

Agreements are worth little unless they are willingly followed by both parties.

Conclusion

Each of these principles can guide the actions of a Management as it seeks to carry forward its programs. They can be summarized by our stating:

- — Let Management's good intentions be recognized.
- — Use low-pressure persuasion.
- — Predict the happening of things that the employees can easily check for themselves.
- — Give employees a feeling of participation.
- — Realize that inequality of strength is a means of promoting sound labor relations.
- — Exchange short-term satisfactions for long-term values.
- — Follow the principle that a rule is no stronger than the willingness of employees to obey, and, hence, enforce it.

These are guides to action. They are ways by which thoughtful Managers can give life to their philosophies. ■

Industrial Technical Intelligence

...Tool for Long Term Planning and Prevention of Technological Surprise

by E. Ralph Sims, Jr.
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THE SKILLS and principles of 'technical intelligence' are useful in business planning for the prediction of long term competition and customer trends. The complexity of modern business and the catastrophic cost of failure resulting from technological errors focus attention on the need for good information and predictions.

This discussion should be prefaced with a brief analogy between a military and a business operation. No doubt those who have served in the Armed Forces and are familiar with various phases of intelligence and its application to military activity will recognize the similarity. Business experience has demonstrated the value of good prediction criteria in making day-to-day and long term decisions.

If a field army is compared to a large multi-product, multi-plant corporation, striking similarities become apparent. (Fig 1).

How does the intelligence function fit into the military and into industry?

Military intelligence is made up of four basic units:

Tactical intelligence (S-2)
Strategic intelligence (G-2)
Political intelligence (State Department)
Economic intelligence (National Security Council)

Each phase of the intelligence operation provides the field army commander with a portion of the knowledge he needs to judge the enemy and the battle environment. He bases day-to-day deci-

FIGURE 1.

FIELD ARMY	CORPORATION
Organization	
The field army is made up of a group of semi-autonomous, operating units with varying objectives—combat teams.	The corporation is made up of several divisions with varying organization and objectives. These are the plants or operating divisions.
Leadership	
The military organization structure is determined by plan but the personality of each commander and his knowledge and skill have a great bearing on his success in action.	The management of each company, plant or division, although guided by policy, is dependent upon the skill and personality of the people involved.
Environment	
A knowledge of the environmental condition (i.e., political and strategical military intelligence) has a great bearing on the order of battle.	The economical and business environment in which a company operates, determines its course of action in a competitive economy.
Tactical Intelligence	
Tactical intelligence provides the field army with a knowledge of the enemy's deployment and intentions. This intelligence is gained from reconnaissance, public utterances and discussions with members (prisoners) of the enemy's army.	Marketing information sets the sales approach and marketing tactics gathered from reconnaissance (market research) public utterances (advertising and trade papers) and conversation with the competition and the customer (salesman).
Technical Intelligence	
Technical intelligence provides field army with knowledge of the enemy's capability and prevents technological surprise, also initiates the knowledge of necessary counter measures and inspires research.	Technical intelligence in industry avoids technological surprise, provides a basis for investment and research planning and provides ideas for competitive counter measures.

sions on a knowledge of the overall strategic, economic, and political background. Long term plans for campaigns are based on information received through Strategic Intelligence, with attention to the economy and political environment in which he must operate.

The corporation president is in somewhat the same situation as the field army commander. There are various economic advisory services and political information sources which give him a broad knowledge of the political and economic environment in which he must operate. His market research organization and sales force perform a valuable tactical intelligence service by providing information concerning the capability and intention of both the customer and the competitor. Most modern corporations derive a degree of strategic intelligence from the alertness of their research and engineering personnel.

AT THIS POINT, THE ANALOGY BREAKS DOWN!

A field army commander usually has a staff intelligence officer who collects and collates the information from all intelligence sources and prepares staff reports and briefings to guide the combat commanders and to aid in strategic planning.

MOST BUSINESS ORGANIZATIONS LACK THIS COORDINATION FUNCTION!

Some of the larger corporations in the basic industry fields (chemicals, heavy manufacturing et cetera) have recognized this need and have attempted to organize intelligence functions. Some have been quite successful in predicting economic trends, making sales forecasts and anticipating technical changes. However, in the main, business management has not fully utilized the information which is available to it. In most cases the data have remained at a low echelon in the organization and have not been available for top management guidance.

THEREFORE, THIS IS NOT A NEW SUBJECT, BUT A NEW CONCEPT FOR APPLICATION OF A TRIED AND PROVEN METHOD OF AIDING IN THE MAKING OF GOOD DECISIONS.

The U.S. Air Force is probably bigger and more complex in its management and technological problems than any business organization which we could mention. The Air Force at the beginning of World War II was in somewhat the same position as that of a large competitive technological manufacturer. It was faced with manufacturing and sales promotion (battle) in competition with a highly competent and wiley opponent. In order to husband its technological resources it was necessary to develop a method for predicting the enemy's technological progress and approach to the fray. Of prime importance was the problem of avoiding "technological surprise".

It is obvious that the vast and complex technology involved in airpower required the development of techniques for the simplification and orderly processing of mountains of information into usable reports. These techniques have been developed. Although much of the work is classified, the unclassified techniques are still not widely available to industry because of the lack of cross fertilization of ideas between the services and the business world.

The final step toward application of these techniques requires the organization and training of a top management intelligence coordination group to achieve proper utilization of intelligence data as a basis for top management decisions.

Some of the possible advantages to be gained from a technical intelligence program are:

1. Guard against technological surprise and anticipate "breakthroughs".
2. Long term technological changes are identified in advance and management is able to beat competition through planned research.
3. Data are provided for long range planning in product design, facility expansion, method changes and automation.
4. When intelligence data are combined with conventional market analysis, the intent and capability of customers and competitors can be evaluated.
5. Capital expenditures can be avoided where markets are dwindling or technical changes are imminent.
6. The organization's "state of the art" position can be defined.
7. Research expenditures can be avoided in fields where others (foreign and domestic) have made substantial progress.
8. The chance for discovery of new untouched markets and products is increased.
9. An intimate knowledge of key technical, management and educational personnel is accumulated and the ability to anticipate customer and competition action is developed.
10. Library data on related technology is a by-product of the program.

There are a multitude of sources for overt technical information and it should be emphasized that covert industrial intelligence activities are not recommended.

The first step in organizing an industrial intelligence staff is the selection of a key individual to manage this group. It is recommended that this person should be knowledgable in the manufacturing and marketing aspects of the company's activities. He or she should be technically trained and inclined to bookishness and capable of detailed library-type research. He should also be a good organizer and a "digger". This individual should report to the vice-presidential level as a staff aide to the senior operating executive. He should be provided with the assistance of a competent technical librarian, well versed in modern library technology and conversant with the technology of the company's products.

With the exception of stenographic and clerical help, the balance of the activities of this intelligence group should be supported by borrowed personnel from the technical divisions most interested in the particular subject under study.

For example, if a prediction study were to be made in the field of polyesters, a senior research chemist competent in this field, would be temporarily assigned to work with the intelligence group in the preparation of a study from the information collected by them. He would function as a technical analyst and a consultant on the interpretation team.

The second step in the preparation of an industrial technical intelligence organization is the definition of the

scope and pattern of the collection services to be embarked upon. This would be accomplished through conferences, analysis, and scrutiny of the company's activities and the future environment. The findings would be subject to continual revision and improvement.

The third phase of the planning activity would be a familiarization study of information sources in the technological fields which are of interest to the program and travel to these sources to meet the people and become acquainted with the procedures for acquiring information.

These first three phases define the nature and scope of the intelligence activity to be organized. After completion of this work, various collection and correlating techniques, filing procedures and information handling methods must be evaluated to determine methods most suitable for the project at hand. Many methods have been tried by intelligence people and certain of these have proved more suitable than others. These proven methods should be tested before new procedures are embarked upon.

The establishment of the collection service is the first major phase in any intelligence program. It is usually necessary to operate the collection service for about a year before sufficient information is available to prepare a review or study from the data on hand with any expectation of valid results. During this period, many bugs and wrinkles in the collection system will be worked out. A redistribution procedure to disseminate the basic information to interested parties can be incorporated in this phase of the work.

The preparation of a good intelligence study requires the "intelligence viewpoint". This viewpoint must be learned. It is not compatible or similar to the usual businessman's approach. It involves a viewpoint based upon long range evaluation of the business with complete detachment from its identity but full recognition of its position in the economy. Development of this viewpoint involves much philosophical soul searching and counsel.

When coupled with the intelligence viewpoint and a good collection service, technical intelligence analysis can prove an invaluable addition to management's decision making tools.

A glimpse into a probable case of the lack of good technical intelligence concerns the photo flash bulb. Most of us have used a flash bulb occasionally. Some may be real camera bugs and use an electronic flash. A film with a speed of 400 will be marketed in the near future. Did the flash bulb manufacturers discover this too late? Were they aiming their competitive strategy at overcoming the electronic flash, a relatively small market in the professional and highly skilled amateur field? The box camera enthusiast uses the common flash bulb. With the advent of 400 speed film, who needs a flash bulb?

IN TODAY'S TECHNOLOGY, A STRATEGICAL ERROR IN TECHNOLOGICAL PLANNING CAN MEAN DISASTER. THE CAPITAL INVESTMENT NEEDED IN THE PREPARATION OF NEW PRODUCTS IS TOO VAST TO BE TOYED WITH. MANAGEMENT CAN NOT AFFORD TO BE WITHOUT GOOD TECHNOLOGICAL INTELLIGENCE.

Cost-improvement Goals

Management is becoming aware that cost improvement is a lot like new product research. If you want it, you must plan for it. It requires the investment of time and money and the establishment of the kind of goals which trigger innovative effort on the part of both line and staff. It is regrettable that cost reduction goals usually only become specific in a belt tightening period when there is insufficient time to adequately plan to meet them.

From a human standpoint, the establishment of specific productivity or cost improvement goals during "good times" is a difficult one; however, the consistent pursuit of these goals can be considered as a sign of maturity on management's part. Customers, employees, and the general public certainly have a right to expect greater consistency in this area so that management will bring the same talent that it uses in planning for growth and new products, to that of holding the line on costs and increasing productivity. The lead times from both a material and human standpoint are as great or greater.

Basic to any continuous cost improvement effort in a company is the establishment of goals. The simple question, "Can we produce this for $26.00?" fires the imagination of everyone involved and points the way to answering hundreds of questions. On the other hand, the question, "What will this cost us to produce?" excites no one and raises a multitude of new questions.

Cost improvement is a lot like mining. One must first locate the ore, decide on the extent and value of the bed, analyze the best way to extract it, and then organize to do the job. In a business sense, we can think of it as identifying the sources of cost improvement, determining and allocating the effort to realize these improvements, and then organizing that effort.

Warren E. Alberts: "Organizing for Continuous Cost Improvement."

Accountability—A Key to More Effective Control of Maintenance Costs

by Thomas E. Cahill

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WITH the recent trend toward shrinking profit margins, many executives have begun to realize the significant contribution that control of maintenance costs could make to corporate profits. Those who have tried to take advantage of this opportunity, however, have found that such control is not easily achieved. This interest and its attendant frustrations are illustrated in a remark made by a top manufacturing executive during a recent discussion. He stated, "The fact that maintenance costs are increasing, both in absolute and relative terms, means that we are spending more time and effort in trying to control them. I wish I could report success, but we have not licked the problem yet."

This article describes an approach to this problem which makes it possible to measure the effectiveness with which maintenance costs are controlled by those who are in a position to control them. As a result, accountability for these costs can be assigned and enforced.

Key Factors Controlling Maintenance Costs

In order to appreciate the problems involved in controlling maintenance costs effectively, it is necessary to identify and understand the key factors that determine the level of maintenance costs. Basically, there are two such factors:

1. The *amount* of maintenance work that must be performed. (For example, the frequency with which a machine has to be overhauled, a floor has to be repaired, or an area has to be painted, etc.) This *amount* will be partially determined by the condition in which management decides it is economic to maintain the facilities. In addition, the level of production activity has a direct bearing on *amount* of maintenance work that must be performed.

2. The *efficiency* with which the work is performed. (For example, how much it costs to overhaul a certain machine, repair a section of floor, or paint a given area compared with what it should cost.)

If the *amount* of maintenance work and the *efficiency* with which it is performed determine the level of maintenance costs, it follows that control of these two factors will result in control of maintenance costs.

Controlling either of these factors would not seem to be too difficult. Why then is effective maintenance control so difficult to achieve? To answer this question it is necessary to first look at present control plans and analyze their weaknesses and limitations. After this has been done the approach, designed to overcome these weaknesses and limitations, will be described.

Present Control Plans and Limitations

(a) *Present Plans*

As a natural result of the increasing impact of maintenance costs, many attempts have been and are being made to control them. Although there are minor variations in such control plans, they basically involve the establishment of standards or estimates on the maintenance work that needs to be done and the measurement of the efficiency with which this work is done by comparing actual costs against the standard or estimate. Budgets of maintenance costs by production department or plant area are developed and actual maintenance costs (which include the efficiency or inefficiency with which the work is done) are compared with this budget to measure performance. A sample control report, typical of such plans is shown below:

Control Report

	Budgeted Cost	Actual Cost	Variance
Department A	$2,000	$2,500	$(500)
Department B	2,000	2,500	(500)
Department C	2,000	2,000	0
Department D	2,000	2,000	0

The value of such a report is that it presents a measure of effectiveness in adhering to budgeted costs. However, it does not indicate where improvement opportunities may lie and, therefore, any attempt to use such information as as a tool for controlling and reducing maintenance costs suffers from the serious limitations described below.

(b) *Limitations*

The basic difficulty with this approach is that responsibility for the failure of Departments A and B to meet the budget cannot be pinpointed because the two basic causes of such failure (a need for more maintenance work than had been anticipated and/or inefficiency in performing this required maintenance work) are not normally under the control of one person or group within the organization. For this same reason, it is not possible to tell

who or what is responsible for the apparently satisfactory performance of Departments C and D.

Most current programs either do not understand or choose to ignore the dual nature of the factors that determine the level of maintenance costs. Specifically, the difficulty with most unsuccessful maintenance control programs is either:

1. The plan attempts to control only one of the factors that determine the level of maintenance costs, or

2. The plan attempts to control both factors by the use of some single measure or index that reflects in either or both of the factors.

The result of attempting to control only one factor is control of neither factor. The factor where no control is attempted is obviously uncontrolled. Control of the other factor can never be really effective since the uncontrolled factor becomes a convenient dumping ground for excess costs. If the *amount* of maintenance work is controlled, the "inefficiency of maintenance labor" will be blamed for excess costs. If efficiency is controlled, "unusual maintenance requirements" will be used to explain the excess costs. For example, how often has a production foreman explained excess maintenance costs in his department by saying that the maintenance mechanics "dogged" the job? Conversely, the maintenance foreman will often complain that certain equipment required an unusual amount of maintenance for some reason and that the apparent inefficiency of his mechanics was really the result of considerable additional work on their part.

The use of a single index to control both factors encounters similar problems. Since variances could be the result of either factor, attempts at control usually degenerate into debates over who or what is responsible for the excess cost.

Program for More Effective Maintenance Cost Control

(a) *Independent-Control Concept*

It is recognized that control of both contributing factors is necessary for effective over-all control of maintenance costs, but, as has been pointed out, combined control does not produce satisfactory results. If, however, responsibility for each maintenance cost factor were assigned to the specific group that influences that particular factor, both "amount" and "efficiency" would receive the attention necessary for effective control. The independent-control concept calls for separate measurement and control of the *amount* of maintenance work and of the *efficiency* with which it is performed.

Such a control program must provide separate and distinct indexes that independently measure effectiveness in controlling *amount* and *efficiency*. In this way, responsibility for excess cost resulting from either factor can be pinpointed and, as a result, costs can be controlled.

The reason that such independent control will be most effective can be readily seen from analysis of the assignment of responsibility for *amount* and *efficiency* of maintenance work in the normal organization.

Responsibility for *efficiency* of maintenance work lies with the supervision of the maintenance mechanics. It is through this group that control of the *efficiency* of maintenance must be exercised.

The *amount* of maintenance work required, on the other hand, may be affected by either the production group that uses the equipment, the engineering group that originally designed or selected the equipment, or the maintenance group that, by the quality of the preventive maintenance and repair work they perform, can greatly affect subsequent maintenance costs.

Depending on the industry and the existing organizational relationships, one of these groups will normally exert the major influence on *amount* by exercising the authority to determine the extent and timing of maintenance work. It is through this group that control of *amount* of maintenance must be exercised.

Thus we see that entirely separate groups or persons are responsible for the two different factors that control maintenance costs. Any attempt to exercise control through two different groups using the same index is doomed to failure.

(b) *Independent Control in Action*

If independent control of the *amount* and *efficiency* of performing maintenance work is required for an effective program, the natural question that follows is: How is such independent control of these factors achieved in practice?

The approach to control outlined below requires no additional information to the normal maintenance control approach. These normal requirements are budgets that measure how much maintenance costs should be for a planning period, actual costs on individual maintenance jobs, and standards or estimates that describe what individual maintenance jobs should cost.

The difference between ineffective and effective control lies in the way in which responsibility for these costs is assigned and the resultant method of charging these costs.

Effective control will result from a plan that utilizes the three types of data noted above in the following manner:

1. The total standard or estimated cost for jobs completed in a department during the period is developed. This total is then compared with the budget that measures what costs should have been during this same period. Such a comparison provides a pure measure of effectiveness in controlling the *amount* of maintenance work that is performed.

2. The total standard or estimated cost is charged to the group that is determined to exercise the major control over the *amount* of work. This group is also assigned the budgetary allowance for maintenance.

3. The total standard or estimated cost for jobs completed during a period (developed in point 1 above) is compared with the actual costs for these same jobs. Such a comparison provides a pure measure of effectiveness in controlling the *efficiency* of the maintenance work performed.

4. The difference between standard or estimated costs and actual cost is charged to maintenance supervision who control the *efficiency* with which the work is performed. (In practice actual costs would be charged into the maintenance account, and standard or estimated costs would be charged out of the maintenance account, leaving any difference as a favorable or unfavorable variance in the maintenance account.)

Sample performance reports that incorporate the independent-control concept for *amount* and *efficiency* are shown below. These reports are based on the same cost figures that were used in the previous example illustrating typical control reports of present plans.

Control Report — Amount

	Budgeted Cost	Standard Cost of Work Performed	Variance
Department A	$2,000	$1,900	$100
Department B	2,000	2,600	(600)
Department C	2,000	1,700	300
Department D	2,000	2,300	(300)

Control Report — Efficiency

	Standard Cost of Work Performed	Actual Cost	Variance
Department A	$1,900	$2,500	$(600)
Department B	2,600	2,500	100
Department C	1,700	2,000	(300)
Department D	2,300	2,000	300

The value of these reports as control tools can be readily seen. What appeared to be plainly "bad performance" in Departments A and B is really

— The effective control of *amount* and the ineffective control of *efficiency* in Department A

— The ineffective control of *amount* and the effective control of *efficiency* in Department B.

Such detailed knowledge provides the basis for prompt and effective corrective action.

Of even more importance, however, is the fact that the independent-control concept can point up the kind of problem that is illustrated by Departments C and D. In these two cases present control reports would indicate a satisfactory situation and therefore any improvement opportunities that may exist could easily be overlooked. Actually, these departments do present opportunities for substantial improvements in control and reductions in cost, and the revised control report would indicate this. The fact that they are performing considerably better than standard for one factor (Department C for *amount* and Department D for *efficiency*) may indicate the need for adjustments in budgeting or estimating techniques, maintenance standards or both. Conversely, the poor performance of these departments for the other factor (Department C for *efficiency* and Department D for *amount*) points to a need for the supervisors responsible to investigate the causes of this poor performance and take steps to bring these costs into line.

Thus, in the cases of both below- and above-standard performance, opportunities for reduced maintenance costs are brought to light which would have remained hidden if the independent-control concept were not in use.

The figures used to complete these illustrative reports and demonstrate their value have been chosen purposely so as not to cast either production or maintenance executives as the villains of the piece.

The author feels that the independent-control concept can be of such value to both groups and to the entire manufacturing organization that any tendency toward bias might hinder an open-minded evaluation of the plan's merits. The important task is to identify the reasons for poor performance no matter on whose doorstep they may lie. Once this has been determined, the battle for control and cost reduction is half won.

How to Develop Required Data

Budgets that measure how much maintenance costs should be for a planning period can be developed by methods in fairly common use today if such budgets are not already available. These methods would include:

1. Analysis of historical records on maintenance costs by department related to production, operating hours, or some other locally logical base index;

2. Analysis of repair costs on individual pieces of equipment from equipment records and the development of a budget from these data;

3. Analysis of equipment design data to determine, through engineering calculations, what the frequency of maintenance and repair work should be. This frequency can then be converted into a dollar budget on the basis of the anticipated equipment usage for the period and the estimated cost of the maintenance and repair work that will be required as a result of this usage.

Actual costs on individual maintenance jobs, if not available, can be readily obtained.

Standards or estimates that describe what individual maintenance jobs should cost are the most difficult data required. Since these measures are needed in any system of maintenance control, the problems of achieving accurate standards or estimates must be solved for any control system.

The normal methods of establishing standards and estimates on maintenance work are time study or work sampling methods, predetermined time values and comparison with historical records.

Steps Required to Implement The Program

1. Assign definite responsibilities for *amount* and *efficiency* of maintenance work.

2. Ensure that the records-keeping system is capable of providing the information on actual costs with the accuracy and speed required for control to be effective.

3. Develop budgets on maintenance costs as outlined above. Review and obtain approvals from those responsible for the budget.

4. Develop a program for establishing standards and estimates on individual maintenance jobs. These standards and the methods of estimating should be developed in cooperation with the supervisory groups whose performance is to be measured with these tools.

5. Develop a series of reports that will provide those responsible for *amount* and *efficiency* of maintenance work with timely and understandable information on their performance so that effective corrective action is possible where necessary.

6. Begin using the program for control purposes.

7. Continually improve maintenance cost performance as changes in equipment and operating conditions permit.

Summation

The two controlling factors that determine the level of maintenance costs are *amount* of maintenance work and the *efficiency* with which it is performed. Present attempts at control are not effective because they either ignore one of the factors or attempt to control both factors with a single index. Because the two factors are usually the responsibility of different persons or groups, they must be measured and controlled independently. Such independent control can be effective if:

1. The organization plan is established in such a way that accountability for *amount* and *efficiency* can be pinpointed.

2. *Amount* is controlled by comparing the standard or estimated cost of work performed against the budget. *Efficiency* is controlled by comparing the standard of estimated cost of work performed against the actual cost of work performed. In this way two variances are generated, each of which measures effectiveness objectively.

The Nature And Use Of Committees

by Estill I. Green
Executive Vice President
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NEVER before have committees had it so good. Now that the psychologists, the social scientists and the managerial mentors have led business safely away from that horrendous thing they refer to as monolithic organization; now that all the blessings of conjoint decision and consultative supervision have been showered upon us; now that we have reached the promised land of milk and honey and group-mindedness, the committee has become a widely used instrument of organization. No longer is the suggestion to appoint a committee greeted with sarcasm, suspicion or distrust. Everybody knows that management committees have made Jersey Standard and DuPont what they are today. Obviously, what's good at the top is good at all levels. So committeeism is rampant. In the vernacular, business has gone whole hog for committees.

To be sure, you do find an occasional skeptic. Herrymon Maurer, for example, tosses in this paragraph in *Fortune*[1]:

> *When the chairman declares the meeting adjourned, the discussion has already gone on for an hour beyond schedule. One member has expressed opposition to the project at hand because he is in the habit of expressing opposition. A second has discussed extraneous issues in detail until finally ruled out of order. A third has asked the chairman to explain the project more fully. A fourth has repeated what the chairman has just said. And two members have fallen into an acrimonious dispute, using the project under discussion for display of personal rivalry. In the course of the meeting, one member dozed off; two others lost themselves in doodling; another began writing a memo on a different topic; and the chairman — uncertain at the beginning of the meeting as to the merits of the project — finds himself addled and exhausted at the end of it.*

Then, too, you can find an occasional oldtimer who recalls the Kettering innuendo about committees. It appears that Mrs. Kettering was reading the newspaper account of Lindbergh's historic flight to LeBourget. "Isn't it wonderful!" she exclaimed. "And to think he did it all alone!" "Well," remarked the Boss, "it would have been still more wonderful if he had done it with a committee."

But who nowadays would take such detractors seriously? The old saw that a committee keeps minutes and squanders hours is clearly an exaggeration. The fact is that many estimable committees don't keep any minutes. Besides all this, committees have been researched at Harvard. The Laboratory of Social Relations up there, in a bold departure from the mathematical theory of decision-making, has conducted an experimental investigation of the functioning of committees[2]. The result is nothing less than a set of working formulas for the successful conduct of committees.

The Harvard experts have determined the optimum number of members for a committee. And it isn't 7/10 of a man, that delightful if somewhat illusory figure deduced by Bruce Old in his classic treatise, *On the Mathematics of Committees, Boards and Panels*[3]. Not so, say the Cantabrigians. The optimum number of members is five, and the half-efficiency points lie in the vicinity of 3.8 and 6.9 members, respectively. As to that so-called Old's Law, perhaps better referred to as Old's Hypothesis — which asserts that the work output of a committee is inversely proportional to the organizational level of its members — recent results suggest that the Pentagon environment may have vitiated Old's researches. There appears to be some correlation, but the proportionality factor is not unity.

Neglecting more esoteric details, the conditions prescribed by the Harvard sociologists for most effective committee performance are these: The committee members should be so chosen that their index of participation falls along a gradient—a multistep function ranging, presumably, from proficient members to drones. Fifty per cent of the meeting time should be devoted to information and questions, and 50 per cent to an-

swers and reactions. The reactions are particularly important. There should be precisely two positive reactions for each negative one. A ratio lower than this indicates a divisive and emotional situation, while a higher one indicates inhibition, restraint, and domination by the chairman.

Thus an old art is by way of becoming an exact science. Among the instrumentalities of this new technology we find: high level committees, low level committees, technical committees, task forces, working groups, one-man committees, program committees, community fund committees and eleemosynary committees generally, anniversary luncheon committees, committees ad hoc and committees ad infinitum.

In view of the growing elaboration of committeeism, it appeared that a survey of certain committees existing in the organization with which the author is identified might yield interesting conclusions. Most of these committees were created for the purpose of exercising joint responsibilities where liaison between the staff and the technical departments is essential.

Fig. 1 is a smokestack chart showing the density of committees by numbers of members. Except for the four committees out on the righthand tail, we find a compact universe ranging in size from three to ten members, with a median, not at five, but at seven, and with two large peaks at six and eight. This might indicate either that committee efficiency falls below the optimum, or that, in the particular circumstances involved, people have learned to work together so harmoniously that the optimum number of members is larger than the Harvard figure.

Another interesting fact is that two-thirds of the committees have an even number of members. This seems to fly in the face of the tradition that the number of members should be odd. It would appear either that deadlocks are not frequent enough to generate a large demand for odd numbers, or that chairmen are quite adept at resolving tense situations.

The next chart (Fig. 2) shows the cumulative distribution curve of committees as a function of number of members. For comparison, a cumulative Poisson distribution curve is shown. The close fit suggests that the committees under consideration are characterized by a high degree of randomness. All this is a long way from fulfilling Lord Kelvin's dictum that you haven't much of a science until you can put numbers on things, but at least there is progress in that direction. So much for quantitative analysis. From here on we shall not need to concern ourselves with anything so tightly disciplined as numbers or facts.

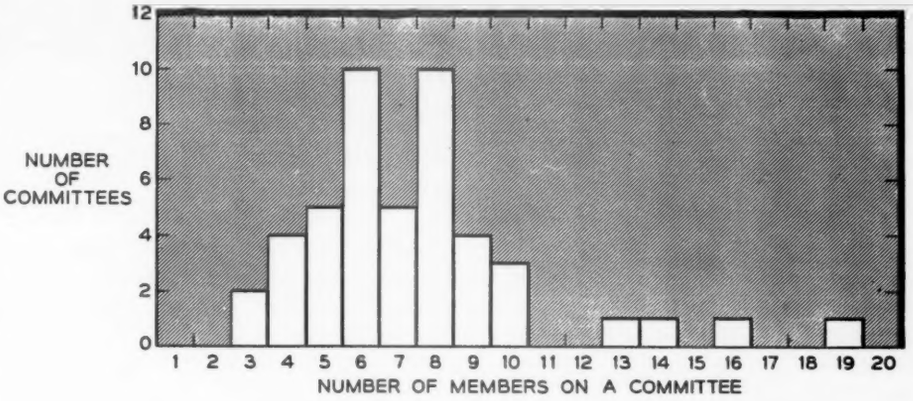

FIG. 1 - DENSITY DISTRIBUTION OF COMMITTEES

Considering the prevalence of committees, we might, in all seriousness, ask ourselves a few questions about them. Here are some rather obvious ones:

(1) What are the advantages of committees?
(2) What are their disadvantages?
(3) How should they be used?
(4) How can successful operation be achieved?

Fig. 3—MERITS OF COMMITTEES
(1) Excellence of Decisions
  (a) Group solution
  (b) Combined judgment
  (c) Continuity
(2) Strength of Decisions
  (a) Conjoint decision
  (b) Prestige of committee
(3) Development of Personnel
  (a) Broadening
  (b) Teamwork
  (c) Leadership (chairman)
(4) Supplement to Line Organization
  (a) Liaison
  (b) Communication

Advantages

To start with, let's look at advantages. A lot has been written about this. Fig. 3 attempts to list some of the merits of committees, both published and unpublished.

At the top of the list comes excellence of committee decisions. A number of heads contribute to the solution of each problem. There is a pooling of information. Mutual discussion stimulates the flow and interplay of ideas.

Moreover, the solution is objective. The combined judgment of many heads is bound to be better than that of one. Any weak spots in an individual suggestion are likely to be detected. As C. J.

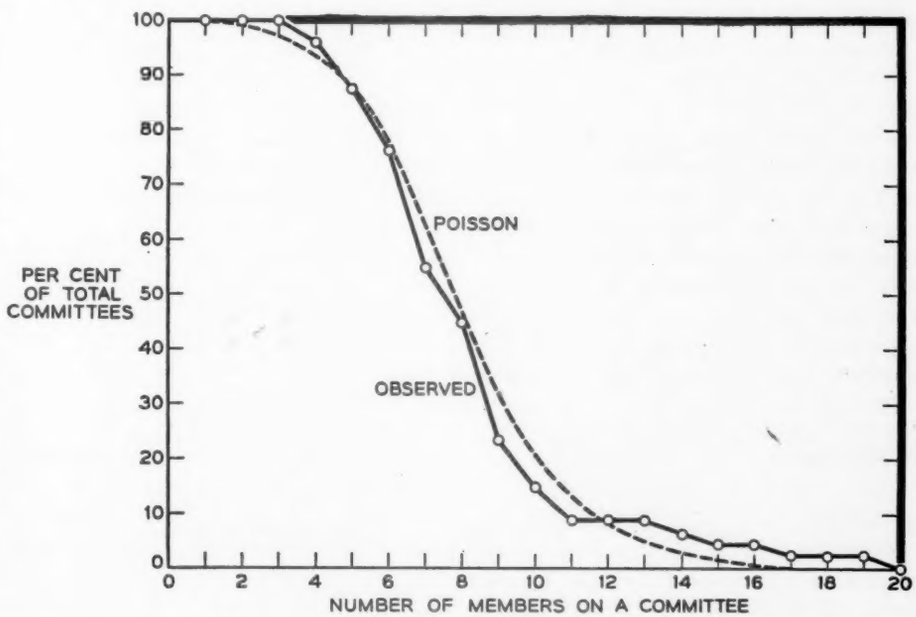

FIG. 2 - CUMULATIVE DISTRIBUTION CURVE FOR COMMITTEES

Berwitz has pointed out[4], the final answer should be a realistic synthesis of theory and practice. Also, the committee has a sort of flywheel effect. It can be made a continuing body, with sufficient overlap of personnel assignments to provide continuity of policy.

Next, perhaps, comes strength of committee decisions. Group participation and conjoint decision conduce to good acceptance throughout the organization. Achievement of deserved prestige by the committee can be a further factor toward the same end.

Still another merit of committees is development of personnel. The members profit from friendships in different parts of the organization. The problems that confront them are different from the day-to-day grist, and frequently much broader. Moreover, the committee members develop a spirit of teamwork and a sense of respect for the ideas of others. And not least important is the practical training that the chairman receives in group leadership.

Finally, a committee which includes in its makeup broad representation from different parts of the organization can be a useful supplement to the line organization. Almost of necessity the committee provides liaison between parts of the organization. Moreover, it can be made a valuable instrument for communication, both communication of its decisions and of the reasoning that underlies them, and also communication of general informational matter.

Some people say that one of the merits of a committee is that it counteracts organizational deficiencies. Another way of saying it might be that crosslinkages of elements make for strength and flexibility in organizations of people just as with molecules.

This is indeed an imposing array of advantages. Clearly committees are not used nearly enough. But before jumping to conclusions, we might inquire whether by chance there may be anything wrong with committees. Drawing in part upon published material, and in part upon experience, another list, this time of shortcomings of committees, has been compiled. (Fig. 4)

Shortcomings

In the first place, committee decisions are notoriously inferior. The reasons for this are not far to seek. Committees must operate on an essentially unanimous basis. The members, drawn from different parts of the organization, will have conflicting interests. The net result is a wishy-washy compromise. Unanimity spells mediocrity.

Furthermore, the committee is subject to domination by the chairman. Discussion is therefore denied, creativity is stifled and the members are inhibited. In addition, committee decisions of any importance are subject to political influence. The members are chosen, not for their qualifications, but merely to represent departments.

Because of personnel turnover, committees lack continuity, so that their policies are likely to be erratic. Moreover, committees lack motivation. They are apt to be irresponsible and indifferent. The members can't be held to account for their mistakes. Someone has observed that a committee, like a corporation, "has neither a soul to be damned nor a body to be kicked."

Even worse is haste. As a rule the committee meets very seldom. Hence it has to rush through a crowded agenda, with no time for adequate consideration of anything. Awkward issues are usually placed in cold storage. No wonder the decisions are less than perfect!

Committee decisions likewise lack authority. This is explained in part by fctors already mentioned. Furthermore, the committee is by its nature a spasmodic phenomenon, a discontinuous function. Its existence is necessarily limited to the time when it is in session. In between times it is a disembodied spirit. As such it possesses no power to carry out its decisions, and cannot handle subsidiary problems as they arise.

To go on with the list, committee operation is wasteful. Travel to and fro, tardiness, and outside interruptions during meetings, these are all spendthrifts of time. The committee operates at the speed of the least informed member. Hours are consumed in coming to grips with a problem. High-priced time is frittered away on irrelevancies and non-essential details. Moreover, old committees never die. After all, you can't expect them to commit hara-kiri. The best you can hope for is that an astute committee, when it has accomplished what it set out to do, will enter into a state of suspended animation. All in all, committees are an expensive luxury. As a final drawback, any committee setup detracts from the effectiveness of the line organization, and obscures the chain of command.

Fig. 4—
SHORTCOMINGS OF COMMITTEES

(1) Inferiority of Decisions
  (a) Compromise
  (b) Domination
  (c) Unqualified members
  (d) Lack of continuity
  (e) Inadequate motivation
  (f) Haste
(2) Impotency of Decisions
  (a) Intermittency
  (b) Executive instrumentalities lacking
(3) Wastefulness
(4) Depreciation of Line Organization

So now where are we? Just a short while ago we seemed to have found the foot of the rainbow. Now the sun's gone dim and the moon's turned black. We begin to suspect that the truth lies somewhere in between. But just where? Perhaps we can best get at the answer by asking when and for what purposes a committee is useful.

Uses of Committees

The next chart (Fig. 5) lists some of the purposes more commonly served by committees, and over on the side a characterization of the effectiveness of each. To some extent these characterizations stem from published sources[5], but in all cases they represent the opinions of the author.

Fig. 5.—USES OF COMMITTEES

Function	Value
For operational decisions	Special situations only
For facilitating acceptance	Fair
For implementing decisions	Poor
For advising management	Excellent
For creative technology	Fair to Poor
For unifying points of view	Good
As educational agency	Fair
As training agency	Fair

For handling regular administrative decisions, a committee is not very effective. For the most part such use should be limited to special situations. In facilitating acceptance of decisions, a well-chosen committee can play a useful part. It would, however, be inadvisable to place exclusive reliance on a committee to exercise this function. When it comes to implementing decisions, it is extremely difficult to clothe a committee with adequate authority. In general, such use of committees should be avoided like the plague.

On the other hand, committees can be of extremely high utility in the area of advice to management. For such purposes as defining policies, formulating objectives, and recommending plans, they are often nearly indispensable. Even in matters of less importance, the

power of a committee in reflecting different points of view should not be underestimated. And consensuses, though seldom soul-stirring, are none the less valuable.

As to the question of whether a committee can contribute effectively to creative solution of technical problems, this is merely one phase of the broad question of group creativity, which has been the subject of extensive discussion and limited investigation. To some extent the answer depends on semantics. Obviously neither a committee nor any other group can, as an entity, create ideas. Only individuals can do this. Individuals meeting as a group may, however, stimulate one another to create ideas, as in the rather overadvertised technique of "brainstorming". In most situations, a committee is likely to be less original and less efficient in producing ideas than its members acting separately. On the other hand, a committee confronted with the type of problem that requires a combination of creativity and judgment can usually reach a better solution than any one member could achieve.

Not only can committees reflect different points of view; they can on occasion go a long way toward reconciling differences. More broadly, a committee sometimes can be used to advantage as an educational agency. If this is a serious aim, then the committee members should have adequate individual time to devote to it.

Finally, the broadening and development that members and chairman receive through service on a committee is a real and valuable by-product. We should not forget, however, that the curve of individual benefit vs. time flattens off quite rapidly.

Management Responsibilities

Comes now the fourth question: how can successful committee operation be achieved? Anything that can be said about this will sound obvious. Even so, a few things may be worth saying. After all, neglect of the obvious probably causes more trouble in this world than failure to fathom the obscure.

Suppose now for simplification we phrase the question this way: How can management, members and chairman contribute to committee success? Management, being the creator of committees, naturally comes first.

A few suggestions as to the usual obligations of management toward its committee offspring are ventured in Fig. 6.

Fig. 6—OBLIGATIONS OF MANAGEMENT TOWARD COMMITTEES

(1) Sound Charter
(2) Qualified Members
(3) Right Size
(4) Turnover
(5) Reports
(6) Follow up Decisions
(7) Discharge

It needs no sage to tell us that management should start the committee off with a sound charter. More specifically, management should assign real problems, make the objectives clear, and clothe the committee with adequate authority. In most cases the purpose and composition of the committee should be announced in writing.

Next, management has the responsibility of choosing qualified members. Actually, the desired characteristics are not too different from those we look for in the usual team approach to creative technology. Committee members should have broad vision, should be well-informed, creative, analytical, objective and cooperative. They should be good workers, good listeners, and so forth. Rarely is it possible to find all the desired qualities in a single person. The members should therefore be chosen so that their characteristics supplement one another. Also, the members should usually be representative of different parts of the organization, with good balance as to points of view. At most, there should be only one peculiar member, or so-called "odd ball".

Of course, the magic figure of five committee members is not mandatory. However, the matter of committee size deserves careful attention.

There seems to be general agreement that for any continuing committee there are advantages to be had through turnover of membership. If left to the chairman or members this can lead to embarrassment. Accordingly, management should make definite arrangements for planned rotation or staggered terms.

Management has still other obligations. If a committee is worth having, it is worth at least occasional recognition. Management should know what its progeny are doing. Periodic reports, either oral or written, should be required. Any decisions reached by the committee should, to whatever extent necessary, be followed up by management. When at last the committee has fulfilled its purpose, it should not be left to linger on the vine. Let it be discharged with grateful appreciation.

Responsibilities of Members

Now what about the responsibilities of committee members? A few are noted in Fig. 7. First is advance preparation. The members have an obligation to familiarize themselves with any material circulated before the meeting. If they are assigned specific tasks to be done between meetings, they are obligated to complete these on time, or to inform the chairman that they cannot do so. In attendance the members should be regular and punctual.

Fig. 7—RESPONSIBILITIES OF COMMITTEE MEMBERS

(1) Advance Preparation
(2) Regularity and Punctuality
(3) Intelligent Participation

But most important, the members should participate intelligently in the proceedings. This means that they should be willing to work, that they should apply to the committee problems as much of scientific analysis and ingenuity as possible, that they should submerge bias, respect the integrity of other members, avoid irrelevant discussion and contribute to the collective decision.

The Chairman

Now we come to the key figure in the whole business — the committee chairman. It's easy enough to write a set of specifications. The chairman must be able to encourage, cajole, soothe or inhibit. He must be calm, alert, aggressive. He must at once use and restrain the genius. He must embolden the timid, stimulate the indifferent, convince the stubborn, make the superficial think.

Such demigods are hard to come by. Fortunately, an inexperienced chairman does not have to learn solely in the rugged school of experience. He can find a lot of published material to help him do his job. Enough has been written about successful committee operation to establish certain essentials. Some that should concern the chairman are listed in Fig. 8.

Few things are more important to committee success than advance planning. A prepared agenda, normally circulated in advance, is a great help to-

Fig. 8—RESPONSIBILITIES OF COMMITTEE CHAIRMAN

(1) Advance Planning
(2) Business-like Procedure
(3) High Participation
(4) Familiarity with Published Material

ward economy of committee time. A good secretary can relieve the chairman of a lot of work of this kind between meetings.

No one but the chairman can hold the committee to business-like procedure. He should first state and define each problem. Next he should solicit discussion, usually by asking questions. Only then should he invite solutions. The chairman should talk to the whole group, and show interest in the reactions of each member. In difficult situations, he should discover and exploit all areas of agreement. The meeting should proceed with neither undue haste nor waste time.

One key to success is a high rate of participation by the members. On any important matter, the chairman should obtain at least some verbal comment from each member. A high rate of suggestion, if it can be had, is even more valuable. In most cases, the accomplishments of the committee can be greatly enhanced by assigning in-between-meeting tasks to different members.

As already suggested, the chairman should make it his business to get acquainted with some of the available literature on committee or conference leadership, committee operation, group decision-making and the like. True, some of the socio-psychological studies go beyond the limits of practical application. Anyone who wades in very deep should be politely skeptical. Nevertheless, there is in the published material a good deal of direct value to any practitioner in the field of committee operation.

Conclusion

In summary, committees are here to stay. We can't do without them, and we can't do with them all that we might wish. Let us make the best of them. For advising management on how to do this, recourse might be had to a Committee on Committees. ■

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Rating and Allowances in Time Study

THE INSEPARABLE NATURE OF RATING AND ALLOWANCES. One of the most interesting and important discoveries of the present study is the fact that rating is done in conjunction with certain general allowances that are to be applied later to the normal time. The size of these allowances has an important effect upon the way the rating scale is actually employed. For example: If allowances, which include personal, fatigue, and catch-all general delay allowances, are comparatively high, the rating scale is employed in such a way that ratings of instantaneous performance are comparatively low or tight. On the other hand, if allowances are low or perhaps inadequate, the same rating scale is employed in such a manner that instantaneous performance is rated comparatively high or loosely. Not only is this what actually happens, it is as should be; because what raters are really trying to do is to establish standards that are fair on a day-in and day-out basis.

The concept of short-term performance is relatively unimportant except as a means to an end. Whether a person works rapidly and takes a great deal of rest-time, or whether he works at a more moderate pace and takes no rest-time, may have little bearing on how much work he produces in eight hours. What matters is how much he should produce in an eight-hour day—the fair day's work.

The qualified time study observer, whether he realizes it or not, has this in the back of his mind. The inexperienced observer does not understand this, and can make serious rating errors; but the experienced man, who knows how his standards work out, has learned that he must use his rating scale in such a manner as to obtain a standard that is fair on a day-in and day-out basis. He knows if his allowances do not change as the type of job becomes more fatiguing that he must shift his concept of how fast bodily movement should be made. He, in effect, projects himself into the operator's shoes and considers all of the factors that have any bearing on how much is produced in an eight-hour day.

As an illustration, assume that a time study engineer is working in a plant in which ten per cent general allowances are applied to the normal time for any and all operations. The company rating scale is a point-hour type of scale in which seventy-five point hour is the expected attainment of the average of qualified incentive operators on an eight-hour basis. After setting standards on many operations, this engineer leaves the employ of the particular plant and accepts a job in a nearby plant which also uses the point-hour type of scale with the same definitive points; however, he learns that the general allowances to be applied to all operations are twenty per cent rather than ten per cent. If this time study engineer is to establish standards that are equitable in the second plant, he must shift his concept of what is a proper instantaneous or short-term performance. He must tighten his concept or lower his ratings for equivalent instantaneous performances.

An important advantage that is forthcoming from this concept of rating a day's performance is that it makes the size of the fatigue allowances relatively unimportant. A great deal of time and money has been spent in trying to determine what proper fatigue allowances for different operations are. To date very little success has been achieved in a scientific way in establishing accurate fatigue allowances. Fatigue is difficult to isolate and apparently not subject to objective measurement. While there is no doubt that such a condition can exist, it is extremely variable in nature. Fatigue is a function of the number of hours worked, working conditions, physical condition of the worker, his outlook towards his job, home life, diet, and many other factors. Moreover, there seems to be no physiological measure of effect of fatigue that can be accepted as reliable or as valid. A job may be fatiguing to a worker on Monday, and not fatiguing on Tuesday, depending on his physical status or his mental attitude toward his work.

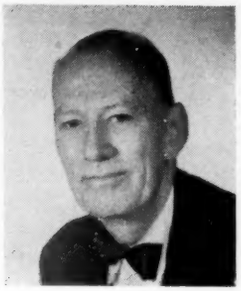
Many extensive researches have been carried on in our universities on the nature of fatigue with the objective of establishing fatigue allowances for use in time study. Although the results of these studies have increased our general knowledge, they have in no way helped the time study engineer in his day-by-day problem of establishing fatigue allowances for specific operations.

A FAIR DAY'S WORK
(Analysis of the S.A.M. Performance Rating Films), pp. 8-10.

The Society—1958-59

by PHIL CARROLL

Chairman of the Board, S.A.M.



OUR SOCIETY has continued to expand and improve as a force in professional self-development toward the advancement of management. I have seen many gratifying evidences in the eight Region meetings I was privileged to attend. Further evidence was noted in the Chapter efforts behind the twelve workshops I put on, where Chapter profits ranged from a few hundred to fourteen hundred dollars. One unusually successful workshop was conducted by Lamar State College Chapter. In addition, I took part in two Chapter conferences, five regular meetings, presented three Professional Manager Citations, presided at two national conferences, and visited with officer representatives of 68% of our senior Chapters, not including those who attended national meetings.

Other Society developments began with the preparation of our "Society's Purposes and Objectives" by Board Chairman Homer Lunken. These point out that management development is basically self-development.

From this have grown three parallel "ladders" that should help individuals to progress. These are explained under Member Grades, Manager Development Courses, and Society Awards.

NATIONAL OFFICE

Our national office head, Harold Bixler, decided to accept a position that would permit him to be at home more often. We were sorry to lose his skills. He had done a great deal to smooth out our office operations.

Patrick J. Reddington became our Executive Director and is doing an excellent job of coordinating our headquarters services. Besides, he managed the series of seven workshops he had previously set up so as to produce a net income of $6775.00. The SAM-ASME Management Engineering Conference carried on under his supervision netted $5800.00 profit.

A five-day NTL Workshop was held in each of the following cities: Asheville, N. C., Palo Alto, Cal., and Burlington, Wisc. These workshops again proved their value as a developer of leadership skill through unique, clinical experiences aimed at getting the individual to know himself better and at the same time, understand why others react as they do in the group setting.

Our Research Director, Vincent Flynn, has brought to publication *The Results Approach to Organization* by Edward C. Schleh; *Scientific Management of Marketing Operations* by Al N. Seares; *Glossary of Personnel Management and Industrial Relations Terms* by the S.A.M. Research Project Committee.

Dr. Flynn conceived the *Professional Manager's Handbook* SAM has agreed to produce for McGraw-Hill Book Company. Scheduled publication time is January, 1961.

In addition, he has taken on the consultive guidance of *Advanced Management* and built an Editorial Board of John M. Barnes, Samuel L. H. Burk, Phil Carroll, Edward D. Kemble, Matthew J. Murphy, Al N. Seares, Ordway Tead, L. T. White.

Marion Cusick, Office Manager and Assistant Treasurer, did a yeoman's job in handling the mountains of detail connected with office operations, and in setting up our cost and income statements in accord with our new method of accounting.

Roger McBride, working under a Richardson Foundation grant, is preparing workshops in Better Government for use by our Chapters.

MEMBER GRADES

Out of our National Conference Committee's work grow several branches. One is the fundamental that education in management is a lifelong process. Vice President Dause Bibby portrayed this progress as six steps upwards.

The top step was conceived as the Professional Manager. This concept has been made a reality in interim form by our Chicago Chapter, as you will read under Membership. With Junior Grade as the bottom step, there is a broad spread between. So our Lancaster Chapter has undertaken a study of member grades to help develop

1. several grades of membership that more nearly reflect the development of the manager, and
2. appropriate qualifications that will aid in the transfer of members from one grade to the next.

Thus, we plan to have recognition of progress as our members gain knowledge and experience.

MANAGER DEVELOPMENT COURSES

Another branch that grew out of our National Conference Committee's work is a series of Manager Development Courses now being prepared by Dr. Francis F. Bradshaw, Past President and former Board Chairman. The first of this series is scheduled for pilot operations in a few selected Chapters this fall.

These will be self-development, discussion and study group courses as distinguished from lecture types. They will help SAM through its Chapters to bring to local communities much of the best management practice and thinking available anywhere today.

The plan is to examine participants and award certificates for satisfactory completion. Ultimately, "graduation" from this series of courses may be one of the qualifications for our Professional Manager's Grade.

SOCIETY AWARDS

The third branch Secretary Hugo Druehl has in the blueprint stage. It is a series of Society Awards. These are being designed to reward members for contributions to the art and science of management in the lower ranges.

We want to provide incentives of recognition for progressive members. We have many. Yet we may never learn of their new approaches. Nor may they be outstanding enough to warrant one of our present four top awards. For want of a better term, we are calling these "middle manager" awards.

Further in this field, a study of Chapter Awards is being made by our Los Angeles Chapter. The purpose is to

1. devise an overall plan that adds appropriately to the series envisioned, and
2. make known to all Chapters the best of our existing methods of recognition.

FINANCE AND BUDGET

Our latest report from Treasurer Fred Harrell indicates expenses to be $6500.00 less than income for the year.

Budget for next year will be based, in the main, on membership quotas established by our Chapters. This better approach is like forecasting in business and should help us to get more realistic budgets as well as more members. The membership count predicted for the coming year is a 14% increase over this year.

Financial reporting was further improved in two ways. One was to consolidate Society funds. The other was to arrange expenses so they compared with incomes in the major divisions of Society operations.

MEMBERSHIP

Vice President James E. Newsome worked to increase membership by means of our October campaign. This reversed the trend of decline. A similar membership drive will be repeated this coming fall.

Jim Newsome sparked the development of a Professional Manager's division in our Chicago Chapter. This idea has since been used by Milwaukee Chapter to improve service to older members and to gain new members from among managers of small business.

Primarily, Chicago Chapter undertook to develop definitions of qualification for our Professional Manager Citation. Then each Chapter was asked to nominate its outstanding eligible member. Your Executive Committee approved nineteen nominees and citations have already been presented to several of these outstanding professional managers.

Vice President L. T. White and our Wilmington Chapter have six representatives from fourteen Regions actively working to interest Small Business managers in SAM membership.

Further, a "Post-Graduate" plan has been started to continue in membership many more of the students who have been active in our University Chapters.

Qualifications for the grade of Fellow were revised.

UNIVERSITY CHAPTERS

Our University Division under Vice President Harold Fischer is away out front. It has almost twice as many Chapters and 53% more members when compared with our Senior Division.

Were we to induce the 2088 who will be graduated this year to continue active, senior Chapter membership would increase 30%.

REGION FORMATION

Our Chairman, David Wise, has managed in two years to get practically every Region onto a going basis. In addition, he has prepared two manuals for operations.

The two meetings of Region Vice Presidents held are but starters toward the annual "training sessions" we believe are necessary. The key to our future strength and growth lies in the assistance Chapters can give each other through dynamic regional operation. Here is where our Region Vice Presidents can most readily and clearly translate for Chapter Officers the policies and actions they approve in our frequent Executive Committee meetings.

LONG RANGE PLAN

Board Chairman Homer Lunken made a complete study of our national organization structure. The result is probability of a more orderly and effective organization. It establishes clearer lines of execution and proper assignment of new functions.

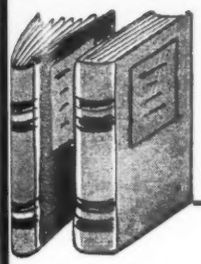
It provides several ways to utilize Region officer interest and experience with a minimum of elected officer succession. One key is creation of the elective office of Executive Vice President (essentially Assistant President). A second is division of our major functions just like in industry and their assignment to existing and proposed elected officers. The third is carrying on of the sub-functions, in the main, by rotating committees composed of Ex-Region Vice President. Experienced men who emerge from these committees should be logical nominees for national office.

CONCLUSION

A book I might write would not describe all the vital work your Chapter, Region, and National Officers have done to help advance our Society. Thus, my report may omit some mentions you consider important. I hope not.

My belief is that we have some improved "products" to market and some better methods for rendering service to our members and prospects.

I am deeply indebted to all the many Chapter, Region and National Officers and Committee Chairmen who have helped me this year. I feel confident that their efforts will return very satisfactory dividends. You can expect more progress in the year ahead with your incoming President Dause Bibby, and his teammates James Newsome, Hugo Druehl, Maurice Bachlotte and anchor man Robert Curry.



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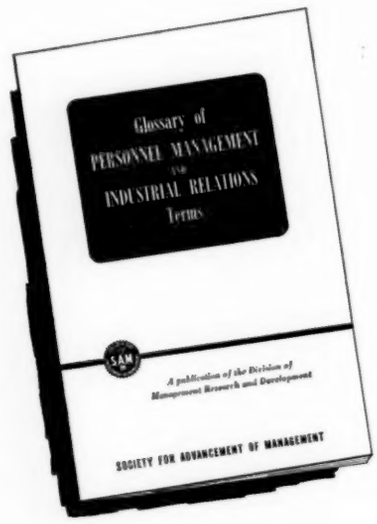

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